

# GAME 194: ADVANCED DIGITAL SCULPTING

## Citrus College Course Outline of Record

| Heading                       | Value           |
|-------------------------------|-----------------|
| Effective Term:               | Fall 2026       |
| 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 192.       |
| Transferable to CSU:          | Yes             |
| Transferable to UC:           | Yes - Proposed  |
| Grading Method:               | Standard Letter |

## Catalog Course Description

Continued study to perfect character modeling techniques with advanced sculpting methods. This course concentrates on the production work flow of ZBrush to Maya and complete high end cinematic quality 3D models. The focus will be on high level detail and animation models. 36 lecture hours, 72 lab hours.

## Course Objectives

- Create 3D models utilizing the fundamental concepts of Pixel modeling.
- Analyze high poly Dynamesh Sculpting techniques for use with static and animated game models.
- Analyze the comparative differences of Classic ZSphere Modeling with ZSpheres 2 techniques
- Create Entry Level High Poly 3D Models to be used for creation of Low Poly Meshes to be used in Game Engine

## Major Course Content

1. Introduction to ZBrush
  - a. Sub Tool
    - i. Merging Tools
    - ii. Extracting Meshes
    - iii. Appending Meshes
    - iv. Duplicating Meshes
    - v. Moving Subtool Layers
  - b. ZSpheres 2
    - i. Edit Sketch
    - ii. Binding Sketch
  - c. Dynamesh
    - i. Reconstruction
    - ii. Adding Vs Subtracting Mesh
  - d. Transpose Master
    - i. Translate
    - ii. Scale
    - iii. Rotate

- e. GoZ Tool
  - i. Transfer from ZBrush to Maya
  - ii. Transfer From Maya to ZBrush
- f. ZBrush Layers
  - i. Create
  - ii. Animate
  - iii. Bake Layers
- g. Image Plane Sculpting
  - i. Profile
  - ii. Front
  - iii. Top
- h. Advanced Geometry
  - i. Dividing
  - ii. Edge Loops
  - iii. Group Loops
  - iv. Crease/Uncrease
  - v. ClayPolish
  - vi. ShadowBox
- i. Displacement Maps
  - i. Creation Of Displacement Maps for Advanced Rendering in Maya
- j. Advanced Hard Surface and Organic Sculpting Brushes

## Lab Content

### Practicum Tools

1. Subtools
  - a. Split
  - b. Merge
  - c. Boolean
  - d. Project
  - e. Extract
2. Geometry
  - a. Edgeloops
  - b. ShadowBox
  - c. ZRemesher
  - d. Modify Topology
3. Nanomesh
4. Layers
5. Polygroups
  - a. Merge Similar
  - b. Group By Normals
  - c. Group Visible
  - d. From Masking
6. Morph Targets
  - a. Store Morph Target
  - b. Switch
  - c. Create Difference Mesh

### Practicum Brushes

1. Create
  - a. Insert Mesh
  - b. Multi Mesh
  - c. Nano Mesh
  - d. Alpha
2. Curve
3. Depth
4. Orientation
5. Surface
  - a. Noise
  - b. Local Projection
6. Modifiers

#### Practicum Render

1. Render Booleans
  - a. Live Boolean
2. External Renderer
  - a. Keyshot
3. Render Properties
  - a. Smooth Normals
  - b. Draw Micromesh
  - c. Shadows
  - d. AOclulsion
4. BPR Render Pass
5. BPR AO
6. BPR SSS
  - a. Rays
  - b. Resolution
  - c. Angle
  - d. Blur
  - e. VDepth
  - f. LDepth

#### Practicum Stroke

1. Modifiers
  - a. Average
  - b. Stroke
  - c. Direction
2. Lazy Mouse
  - a. Steps
  - b. Radius
  - c. Smooth
  - d. Snap
    - i. Plane
    - ii. Line
    - iii. Spline
    - iv. Path
3. Curve
  - a. Curve Mode
    - i. Elastic
    - ii. Liquid
    - iii. Lock Start
    - iv. Lock End
4. Curve Function

- a. Border
  - b. Polygroups
  - c. Creased Edges
5. Curve Modifiers

## 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 Creating Bump Maps, Alpha Maps, Normal Maps and Displacement Maps for use in Game Art and Simulation

## Examples of Outside Assignments

Create High poly Game Assets to be used for the creation of Normal Maps in Game Engine Assets

## Instruction Type(s)

Lab, Lecture