APTE 73 Course Outline as of Summer 2025

CATALOG INFORMATION

Dept and Nbr: APTE 73 Title: INT DIGITAL SCULP (RVPA)
Full Title: Intermediate Digital Sculpting (RVPA)
Last Reviewed: 1/22/2024

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	8	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	APTECH 73

Catalog Description:
This course introduces students to digital sculpting and its integration with traditional modeling workflows for production. Students learn how to create ultra-realistic, lifelike three-dimensional (3D) models with a high level of detail utilizing industry-standard software applications. Demonstrations, exercises, and in-depth assignments help students develop sculpting, sculpting physics, composition, anatomy, and texture-painting skills.

This is a Regional Virtual Production Academy (RVPA) course that is not offered at SRJC but is available through one or more of the other five participating colleges of the RVPA collaborative program. Learn more about the RVPA at https://cs.santarosa.edu/vp

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

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Prerequisites/Corequisites:
Recommended:
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 2024	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Employ a range of modeling and sculpting techniques to create detailed 3D objects.
2. Identify and utilize various workflows efficiently to achieve the desired goal.

Objectives:
At the conclusion of this course, the student should be able to:
1. Apply principles of art and design, which include critical thinking, research, idea generation, and iteration.
2. Demonstrate comprehension of professional terminology related to digital sculpture and 3D modeling.

Topics and Scope:

I. Concept Art
II. Descriptive Data Sheet
III. Reference Photos
    A. Anatomy

- B. Textures
- C. Skin
- D. Surfaces
- E. Lighting
- F. Clothing
- G. Accessories

IV. Scale References

V. Maya
- A. Basic tools and interface
- B. Low-poly modeling
- C. Silhouetting
- D. Layout
- E. Anatomy
  1. muscle structure
  2. construction history

VI. Mudbox, Zbrush, and Maya
- A. Digital sculpting
  1. hard surface
  2. organic
- B. Low- to high-resolution workflow
- C. Normal maps and displacement maps
- D. UVW mapping
- E. Detail passes (smaller details)
- F. Object history

VII. Texturing
- A. Creating tiling textures
- B. Creating unique textures
- C. Creating roughness, metallic, emissive, ambient occlusion, subsurface scattering, detail maps

VIII. Painting in Substance Painter

IX. Exporting Textures

X. Physical Based Rendering (PBR) Materials

XI. Sub-Surface Scattering for Characters and Translucent Materials

XII. Embedded Channel Textures

XIII. Stylized Shaders

XIV. Texture History

XV. Lighting
- A. Render options
- B. Light types
- C. High Dynamic Range (HDR) lighting
- D. Physical sky
- E. Optimizations

XVI. Final Renders

XVII. Practice
- A. Zbrush interface and gathering reference
- B. Brushes and importing reference
- C. Transpose, symmetry, and subtool eyes
- D. Base mesh approaches
- E. Dynamesh basics, Booleans, and groups
- F. Masks, polygroups, and selections
- G. Hard surface elements
- H. Cloth approaches

XVIII. Alphas and Detailing

Assignment:

A. Reading Assignments
1. Along with specific project sections, assigned reading will be made available to students.
B. Projects, Activities, and other Assignments
1. Midterm - Game Asset: Students will create a high-quality video game asset based on a real-world object using techniques taught in class.
2. Final Assignment - 3D Character: Students will create a high-quality video game or animation-ready character.
3. Research - Students research concept art and gather image references for modeling.
C. Writing Assignments
1. Written and oral presentation of midterm and final project and peer critiques of presentations through collaborative dialogue.
D. Final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written and oral presentation of midterm and final project and peer critiques	Writing 5 - 15%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Research - Students research concept art and gather image references for modeling	Problem solving 35 - 60%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Midterm - Game Asset; Final Assignment - 3D Character	Skill Demonstrations 10 - 25%

Exams: All forms of formal testing, other than skill performance exams.

Final exam	Exams 5 - 30%

Other: Includes any assessment tools that do not logically fit into the above categories.

Participation	Other Category 0 - 5%

Representative Textbooks and Materials:
3D Technology in Fine Art and Craft: Exploring 3D Printing, Scanning, Sculpting and Milling.

Mongeon, Bridgett. Routledge. 2015 (classic)
Instructor prepared materials