

**APTE 71 Course Outline as of Summer 2025****CATALOG INFORMATION**

Dept and Nbr: APTE 71 Title: INTER 3D RIGGING (RVPA)

Full Title: Intermediate 3D Rigging (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 71

**Catalog Description:**

Students learn to effectively use animation controls for three-dimensional (3D) models and characters: Use of set-driven keys, deformers, constraints, and kinematic controls, including the exporting of rigged characters and objects to a game/simulation platform.

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:**

Description: Students learn to effectively use animation controls for three-dimensional (3D) models and characters: Use of set-driven keys, deformers, constraints, and kinematic controls,

including the exporting of rigged characters and objects to a game/simulation platform.

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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:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective: Fall 2024	Inactive:
<b>UC Transfer:</b>		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. Design a complete skeleton and create a control rig for a 3D model using forward and inverse kinematics.
2. Skin and paint weights on mesh for accurate deformation of all joints and control and limit movement of joints to behave correctly in accordance with the movement of the model.
3. Create a facial rig and use blend shapes for a character model.

**Objectives:**

At the conclusion of this course, the student should be able to:

1. Set up a complete skeleton for a 3D model.
2. Identify locations and place joints in appropriate locations for realistic movement.
3. Apply set-driven keys to control movement.
4. Rig a character using inverse kinematics and forward kinematics.
5. Set up groups and hierarchies to control inverse kinematics.
6. Rig a face using the blend shapes method and the skeleton method.
7. Bind a character's skeleton to its mesh with smooth binding and rigid binding.
8. Paint weights on vertices so the mesh will deform properly with all joint movements.
9. Limit the motion of joints by locking transforms and setting joint rotation restrictions.
10. Create natural character poses to test the motion of the skeleton and mesh.

**Topics and Scope:**

- I. Overview of Rigging and Industry Roles
- II. Set-Driven Keys and Controllers
- III. Character Skeletons and Joints
- IV. Rigging a Character and Building Controllers
- V. Skinning and Painting Weights
- VI. Facial Blend Shapes
- VII. Rotations, Dynamics, and Kinematics
- VIII. Effective Critique Methods
- IX. Project Management
- X. Create and Apply Blend Shapes for Facial Rigging
- XI. Rigging Characters
- XII. Skinning and Weighting Characters
- XIII. Creation of Set Driven Key Projects-Building Controllers
- XIV. Presentations and Critiques of Projects

**Assignment:**

- 1. Video viewing with written critiques
- 2. Hands-on projects
- 3. 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.

Video viewing with written critiques	Writing 10 - 25%
<b>Problem Solving:</b> Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.	
Hands-on projects	Problem solving 25 - 60%
<b>Skill Demonstrations:</b> All skill-based and physical demonstrations used for assessment purposes including skill performance exams.	
Hands-on projects	Skill Demonstrations 25 - 40%
<b>Exams:</b> All forms of formal testing, other than skill performance exams.	
Final exam	Exams 5 - 30%
<b>Other:</b> Includes any assessment tools that do not logically fit into the above categories.	
Participation	Other Category 0 - 5%

**Representative Textbooks and Materials:**

An Essential Introduction to Maya Character Rigging. 2nd ed. Briggs, Cheryl. CRC Press. 2021  
Instructor prepared materials