



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	DART
Course Number:	103
Descriptive Title:	Digital Animation Principles and Tools
Division:	Digital Art and Design Technology
Department:	Digital Art and Design Technology
Course Disciplines:	Digital Art and Design Technology
Catalog Description:	This is an introductory course in the basic principles and technology of digital animation. Students will develop an understanding of animation through the exploration of timing and movement via traditional animation methods, digital vector graphics, digital raster software and digital editing software to complete exercises and animated sequences. Students will also explore careers in animation through research into career paths and processes in the animation industry.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	3
Outside Study Hours:	4
Total Course Hours:	90
Course Units:	3
Grading Method:	Letter Grade and Pass/No Pass
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	fall 2024
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	

Other:	
CalGETC:	
Term:	
Other:	
Student Learning Outcomes:	Upon completion of this course, students will be able to: 1. Apply principles of animation and traditional paperless (digital, hand-drawn) techniques to animate actions for simple objects or characters. 2. Apply principles of animation and procedural (digital, keyframe) techniques to animation actions for simple objects or characters. 3. Work iteratively, from references, to time and refine animated sequences from sketch, tie-down, and through final cleanup phases.
Course Objectives:	1. Explore career pathways within animation, visual effects (VFX), and games. 2. Apply timing and spacing to make variations of actions for animated objects and character in assigned frame rates (e.g. 24 fps, on 1s, on 2s, and on 3s) 3. Apply squash and stretch, easing, exaggeration, and anticipation to emphasize movement in simple animated sequences 4. Apply straight-ahead and pose to pose techniques to create simple animated motion sequences 5. Apply overlapping action, follow through, secondary action, and arcing movement to simple animated motion sequences 6. Apply solid drawing techniques to maintain relative size and shape of simple animated objects and characters through a motion sequence 7. Explore and apply procedural (keyframe) animation on simple 2D rigged assets including graph editing for timing ease-in, ease-out, fast-in, and fast out actions 8. Apply animation principles and techniques to create looping motion sequences that repeat indefinitely 9. Study and apply motion and sound references to time simple animated action sequences
Major Topics:	Lecture Topics I. Principles of Animation A. Brief History of Animation Techniques B. Disney and the 12 Principles of Animation 1. Squash and stretch 2. Anticipation 3. Staging 4. Frame by frame (Straight-ahead) action and pose-to-pose (keyframe) 5. Follow through and overlapping action 6. Slow in and slow out 7. Arc 8. Secondary action 9. Timing 10. Exaggeration 11. Solid drawing 12. Appeal C. Contemporary Animation Styles and Techniques II. Animation Techniques A. Paperless (digital, hand-drawn) animation techniques 1. Sketching

- 2. Tie-down
 - 3. Cleanup
- B. Procedural (keyframe) digital animation techniques
 - 1. Keyframes
 - 2. Graph Editing
- C. Rigged asset animation
 - 1. Rig hierarchy
 - 2. Controllers, keyframes, and graph editing
- III. **Demonstration of Digital Animation Techniques**
 - A. Paperless (digital hand drawn) animation
 - 1. Frame-rate, cels, exposure, X-sheets, and timelines
 - 2. Vector and Raster layers and assets
 - 3. Lighttable, shift/trace
 - 4. Layered art assets (line and color layers)
 - B. Procedural Keyframe animation
 - 1. Keyframing parameters
 - 2. Graph editing
 - C. Vector and Raster software tools for animation
- IV. **Lecture on Contemporary Animation Development Process and Pipeline**
 - A. Concept development
 - B. Screenwriting
 - C. Storyboard development
 - D. Sound Recording and Soundtrack Development
 - E. Animatics
 - F. Selection of animation technique
 - G. Production
- V. **Lecture on the Overview of Career Exploration in Animation**
 - A. Pre-vis Animators
 - B. VFX and Special Effects Animators
 - C. Game Asset Animators
 - D. Etc...

Lab Topics

- I. **Exploration of Animation Techniques**
 - A. Paperless (hand drawn, digital) Animation of simple objects
 - 1. Techniques and principles
 - a. Timing and Spacing
 - b. Straight ahead and pose-to-pose
 - c. Frame rates and drawing frequencies (1s, 2s, 3)
 - d. Overlapping movement, follow-through, anticipation, easing in/out, fast in/out, squash and stretch
 - e. Animation Layers, Art Layers, Drawing sequences and substitution
 - f. Solid drawing
 - g. Sketch, tie-down, cleanup
 - 2. Objects
 - a. Simple objects (e.g. balls, paddles, paper airplanes)
 - b. Flour sack drawings
 - c. Simple characters
 - 3. Actions (e.g.)
 - a. Rolling
 - b. Falling
 - c. Bouncing
 - d. Looping (e.g.)

	a. Flag waves b. Walking c. Running B. Procedural (keyframe) Animation Techniques 1. Parameters, keyframes 2. Graph Editing 3. Layered Assets and Rig Hierarchy 4. Animating Rigged Assets (e.g. pegged, bones, armatures) II. Application of Animation Principles and Techniques A. Student designed animated sequence (from standard provided character assets) 1. Work from provided standardized character sheet or rigged asset 2. Develop a motion sequence 5 – 10 seconds 3. Sketch, tie-down, cleanup a. Keyframe timing b. Breakdowns and in-betweens III. Researched biographic or career direction presentation A. Choose a specific animation professional or job title to research and present to the class B. Engage with library resources C. Engage with online networking resources to reach out to animation professionals D. Present a short visual and oral overview of the chosen animation professional job or bio IV. Discussion of lecture topics and homework assignments V. Presentation and Critique of Projects, Assignments, and Career Exploration
Total Lecture Hours:	36
Total Laboratory Hours:	54
Total Hours:	90
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
A.2. Primary Method of Evaluation (Part 2 - all courses; choose one):	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Create a short 3 - 5 second looping animation at 24 fps drawing frames on 2s. The animation should express a common emotion to be used in a text / chat scenario to express the chosen emotion without words. The animation should be in a square format and exported in a .gif format no larger than 512 x 512 pixels, suitable for use in chat programs. The final work will be assessed based on meeting the technical requirements of the final asset, the overall quality of the final animation, and the stated goal for the expression and how well it meets that goal.
Critical Thinking Assignment 1:	Create a profile presentation with animated elements that describes the work and career of a chosen animator or director of animated works. Include a critical analysis of the subject's background and career trajectory. Present this as a narrative in 3 - 5 minutes and be prepared to answer questions from your peers.

	The final work will be assessed on the quality of the presentation materials, the quality of the presentation itself and the creative use of animated elements in the presentation.
Critical Thinking Assignment 2:	Research a specific animation production process with a partner or small group and present the process to your peers in a visual slide presentation. Use storyboards to illustrate each stage of the production. The final work will be assessed on its ability to express the chosen production process without narration.
Other Evaluation Methods:	Completion, Presentation
Instructional Methods:	Demonstration, Guest Speakers, Lab, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Skill practice
If Other:	
Up-To-Date Representative Texts:	Williams, Richard, <i>The Animator's Survival Kit: A Manual of Methods, Principles and Formulas for Classical, Computer, Games, Stop Motion and Internet Animators</i> , Farrar, Straus and Giroux, 2012 (Discipline Standard)
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
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Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Arnold Martin
Date:	09/01/2023
Original Board Approval Date:	06/17/2024
Last Reviewed and/or Revised by:	Arnold Martin
Date:	01/20/2026
Last Board Approval Date:	04/16/2026
Effective Term:	FA 2026