



El Camino College
COURSE OUTLINE OF RECORD – Official

Subject:	DART
Course Number:	103
Descriptive Title:	Digital Animation Principles and Tools
Division:	Fine Arts
Department:	Digital Art and Design Technology
Course Disciplines:	Multimedia
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 visiting professional lectures, and 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, non 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:	
Student Learning Outcomes:	<p>Upon completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. apply principles of procedural (keyframe) and frame-by-frame animation to simple objects and/or text. 2. use storyboarding tools to plan an engaging and clear scene or sequence. 3. identify and explore career pathways for animators across animation, film, games and other related industries.
Course Objectives:	<ol style="list-style-type: none"> 1. Examine the production pipeline and responsibility of each department, including the steps, skills, and processes within each pipeline stage. 2. Explore career pathways within animation, visual effects (VFX), and games. 3. Understand career pathways for animators across industries. 4. View and respond to a variety of industry related artistic products integrating industry appropriate vocabulary. 5. Develop and bring concepts to life through iterative processes (i.e., mock-ups, prototypes, performance, etc.) 6. Review content to identify and resolve problems, ensure seamless transitions, and maximize the audience's experience. 7. Adhere to terms of use, including copyright laws and regulations. 8. Research current industry-standard tools and practices used across art, media, and entertainment industries.
Major Topics:	<p>I. Lecture on The History and Principles of Animation (4 hours, lecture)</p> <p>A. History of Animation and Animation Techniques</p> <ol style="list-style-type: none"> 1. Which came first the motion picture or animation? <p>B. Zoetrope Animation</p> <p>C. Flipbook Animation</p> <p>D. Disney and the 12 Principles of Animation</p> <ol style="list-style-type: none"> 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

E. Contemporary Animation Styles and Techniques

1. Procedural (keyframe) animation

2. Procedural (keyframe) bones/armature character animation

II. Lecture on the Overview of Animation Techniques (6 hours, lecture)

A. Frame by frame animation techniques

1. Zoetrope Animation

2. Flipbook Animation

3. Rotoscoping

4. Cut-out Animation

5. Stop Motion Animation

B. Procedural (keyframe) digital animation

1. Asset property keys

2. Armature animation

i. bones

ii. weighting

iii. Applications in game engines

C. Mocap/Live Animation

III. Demonstrate and Lecture on Digital Animation & Motion Fundamentals (12 hours, lecture)

A. Frame by frame animation

1. hand drawn animation styles

2. sprite sheet animations

B. Procedural Keyframe animation

C. Vector and Raster software tools for animation

IV. Demonstrate Storyboard and Sequencing Techniques to Visually Express Narrative (6 hours, lecture)

A. Create a Narrative

B. Use sequencing to divide up the narrative

C. Use appropriate techniques to lay out a storyboard of the created narrative

V. Lecture on Contemporary Animation Development Process and Pipeline (2 hours, lecture)

A. Concept development

B. Screenwriting

C. Storyboard development

D. Sound Recording and Soundtrack Development

E. Animatics

F. Selection of animation technique

G. Production

VI. Lecture on the Overview of Career Exploration in Animation (2 hours, lecture)

A. Pre-vis Animators

B. VFX and Special Effects Animators

C. Game Asset Animators

D. Motion Design for Motion Graphics

VII. Visiting Talks with Animation Professionals (4 hours, lecture)

A. Visiting professionals of a variety of disciplines to provide context and

VIII. Discussion of lecture topics and research homework assignments (8 hours, lab)

IX. Make a short researched biographic or career direction presentation (4 hours, lab)

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

X. Exploration of Animation Techniques (17 hours, lab)

A. Make a digital/analog flipbook animation

1. Layout frame by frame in raster or vector software

2. Create a forever looping pattern

3. Preview results as animated GIF or other digital format

4. Apply principles of animation to enhance the visual appeal of the final work

5. Print, cut and bind a flipbook

B. Make a rotoscope animation sequence from a short video recording

1. Use a contemporary VFX / animation software (ie. ToonBoom, Adobe AfterEffects or Blender)

2. Rotoscope a video frame by frame

3. Apply principles of animation to enhance the visual appeal of the final work

4. Create layers for static elements like environments and props and

C. Make a short stop-motion or Cut-out Animation

1. Use simple objects / clay / Lego kits / etc. to make stop motion scenes and characters

2. or use paper cutouts to make simple 2D scenes and characters

3. Apply principles of animation to enhance the visual appeal of the final work

4. Photograph 3d objects with a digital camera or phone

5. Scan paper cutouts with an image scanner

6. Sequence the frames digitally and export to an appropriate video format

D. Make an animated logo or title sequence

1. Use procedural animation techniques (keyframed properties)
2. Apply principles of animation to enhance the visual appeal of the final work

E. Make an armature animated character

1. Use a contemporary software with 2D armature capabilities
2. Develop a simple character
3. Rig and pose the character
4. Sequence a short pose-to-pose animation sequence (looping optional)

F. Live Animation

1. Use mocap (camera, lidar or other technology) to capture motion
2. Apply that motion to existing 2D or 3D assets (found or purchased)
3. Edit and export to an appropriate video format

G. Make digitally animated emoji assets

1. Use digital raster or vector images to create continuously looping animated emojis or gifs
2. Apply principles of animation to enhance the visual appeal of the final work
3. Export to appropriate formats for web presentation, digital portfolio, etc.

XI. Animation Project to Apply Animation Tools and Principles (16 hours, lab)

A. Create a short Narrative with descriptive

1. Discuss and understand the structure of screenplay writing
2. Apply to a very short narrative to structure the project

B. Create a Storyboard to Visually Express Narrative

1. Use sequencing to divide up the narrative into discrete scenes, shots, and asset lists, dope sheets
2. Use appropriate techniques to lay out a storyboard images to visually express the narrative

	<p>C. Select and Apply Animation & Motion Fundamentals</p> <ol style="list-style-type: none"> 1. Frame by frame animation 2. Procedural (keyframed) animation 3. Squash and Stretch 4. Walk cycles 5. Timing 6. Vector and Raster software tools for animation <p>D. Produce an animatic to visualize the motion from the original storyboards</p> <p>E. Push the animatic as far as possible toward a more polished final project outcome</p> <p>XII. Presentation and Critique of Projects, Assignments, and Career Exploration (9 hours, lab)</p>
Total Lecture Hours:	36
Total Laboratory Hours:	54
Total Hours:	90
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	<p>Create a short 3 - 5 second looping animation using a frame by frame technique. 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.</p> <p>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.</p>
Critical Thinking Assignment 1:	<p>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.</p> <p>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.</p>
Critical Thinking Assignment 2:	<p>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.</p> <p>The final work will be assessed on its ability to express the chosen production process without narration.</p>

Other Evaluation Methods:	Completion, Presentation
If Other:	
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 E., <u>The Animator's Survival Kit, Expanded Edition: A Manual of Methods, Principles and Formulas for Classical, Computer, Games, Stop Motion and Internet Animators</u> , Faber & Faber, 2009 (Discipline Standard)
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite	
Category	
Requisite course:	
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:	
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Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). if applicable	
Enrollment Limitations and Category:	

Enrollment Limitations Impact:	
Course Created by:	Arnold Martin
Date:	09/01/2023
Original Board Approval Date:	06/17/2024
Effective Term:	FALL 2024