Subject:	DART
Course Number:	121
Descriptive Title:	2D Character Animation
Division:	Fine Arts
Department:	Digital Art and Design Technology
Course Disciplines:	Digital Art and Design Technology
Catalog Description:	This course will guide students through the fundamentals of movement cycles using key frames and poses and everything in-between to create the illusion of movement within animated scenes characters. Students learn the fundamentals of digitally animating characters in traditional key frame and frame-by-frame process and the most current methods of puppet animation with rigged assets for film, games, and more. Whether they want to animate for games, TV, film or commercials, this course will give students the foundation needed grounded in the latest software and techniques used in animation studios across the world.
Prerequisite:	DART 101 and DART 103
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:	
Transfer UC:	Yes
Effective Date:	
General Education ECC:	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	

Term:	
Other:	
Student Learning Outcomes:	Upon completion of this course students will be able to: 1. create digitally animated sequences of characters that convey weight, timing, exaggeration, and incorporate appropriate principles of animation. 2. execute digital animation in a layered process to establish key frames, exaggeration, and timing with hand sketched underlayers for in-betweens, resulting in clean line and fill work. 3. create digitally animated character movement and expressions using pre-built 2D rigged puppet assets.
Course Objectives:	1. Develop character assets in industry standard 2D animation software for animation with frame by frame and procedural techniques 2. Apply timing, weight, follow through, and exaggeration principles to animate a variety of character movement sequences and turns in layered frame-by-frame methods 3. Apply timing, weight, follow through and exaggeration principles to animate a variety of character facial expressions in layered frame-by-frame methods 4. Refine frame by frame sketches into clean line and fill work 5. Employ keyed properties and graph editing as needed to create secondary movement and camera movement for animated movement sequences 6. Create character rigs with good hierarchy, forward kinematics and inverse kinematics as appropriate in industry standard software 7. Apply timing, weight, follow through and exaggeration principles to animate a variety of character facial expressions using rigged puppet asset methods 8. Apply timing, weight, follow through and exaggeration principles to animate a variety of character movement sequences and turns using rigged puppet character assets 9. Use consistent and appropriate digital file formats for final design deliverables 10. Organize course work into a professional quality clip reel to present animation work for future opportunities

Major Topics:	**Lecture Topics:**
	I. **Movement and Expression Study**
	    A. Study of human, animal, insect, and man made object movement
	    B. Study of human expression for use in 2D character animation
	    C. Face, mouth and eye shapes for pronunciation
	    D. Study of biomechanics for 2D character animation
	II. **Acting and Expression in 2D Character Animation**
	    A. Anticipation, Timing, Weight, Exaggeration, Follow-through
	    B. Action and reaction
	III. **Character asset creation**
	    A. Character object hierarchy
	    B. Line and color fill control
	    C. Digital drawing "on-model"
	IV. **Frame by frame techniques**
	    A. Digital animation software, drawing layers, raster/vector drawing tools
	    B. Sketch layers to refinement process
	    C. Key frames, breakdowns and in-betweens for 2D character animation
	    D. Character turn animations
	    E. Facial expression animations
	    F. Character movement sequences animations
	V. **Procedural Techniques**
	    A. Keyed properties and advanced animation tools

  B. Character object rigging and hierarchy
  C. Easing and graph editing
  D. Procedural turns and asset replacement
  E. Procedural animation of rigged assets
  F. Procedural movement sequences
  G. Procedural facial expressions
VI. **Sound syncing with character movements**
  A. Lip-syncing
  B. Sound effects
VII. **Characters in scene**
  A. Camera movement and animation
  B. Considering the whole scene
VIII. **Analysis and Critique**
  A. Foundation for critique of animation work
  B. Animation principles for critique of animation
IX. **Project Planning and Execution**
Lab Topics:
 I. **Character animation exercises**
  A. Digital frame by frame character techniques
   1. Turns
   2. Layered drawing process
   3. Key frame and in-between process
   4. Movement sequences
   5. Acting and face expression animations
   6. Application of animation principles for 2D character animation
  B. Digital procedural animation techniques
   1. Hierarchy of objects in character rigs
   2. Rigging "puppet" animation process
   3. Use of node editing for 2D character animation
   4. Procedural turns and sprite replacement
  C. Hybrid animation techniques
   1. Procedural movement with repeating frame by frame sequences
  D. Pipeline and workflow exercises
 II. **Project Planning and Execution**
  A. Final project planning – digital concept environment designs, interior and exterior
  B. Storytelling for world building – presentation of design concepts
  C. Final project execution
 III. **Presentation, Analysis, and Critique**
  A. Presentation of animation work

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:	Create a short animation of a character struggling to lift and hold a heavy object. The animation should effectively demonstrate the principles of posing, arcs, timing, and follow-through.
Critical Thinking Assignment 1:	Use a sample of beat-driven music to animate a motion cycle that hits the beat on the extreme poses. The cycle should utilize one of the 12 principles of animation.

Critical Thinking Assignment 2:	Create an animation of two characters crossing paths on the screen using a separate animation layer for each character. One character should be running while the other is walking.
Other Evaluation Methods:	Completion, Presentation
If Other:	
Instructional Methods:	Demonstration, Discussion, Guest Speakers, Lab, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Skill practice
If Other:	
Up-To-Date Representative Texts:	Williams, Richard, The Animators Survival Kit--Revised Edition: A Manual Of Methods, Principles And Formulas For Classical, Computer, Games, *Stop Motion And Internet Animators*, ed. New York: Faber & Faber Publishing, 2012 (Discipline Standard)
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite	Prerequisite
Category	sequential
Requisite course:	DART 101 and DART 103
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	**Basic concept design and development skills** DART 101 - Digitally draw hard surface environments, props, vehicles, characters, in perspective and orthographically. DART 101 - Use research, imagery, and creative inspiration to generate a mood board or concept document to develop ideas DART 103 - Develop and bring concepts to life through iterative processes (i.e., mock-ups, prototypes, performance, etc.) **Understand and implement standard practices for workflow and file management** DART 101 - Use industry-standard asset tracking, file naming conventions, and storage/back-up protocols. DART 103 - Examine the production pipeline and responsibility of each department, including the steps, skills, and processes within each pipeline stage. DART 103 - Research current industry-standard tools and practices used across art, media, and entertainment industries.
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill(s). if applicable	
Requisite course:	
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Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Arnold Martin
Date:	09/02/2024
Original Board Approval Date:	01/13/2025
Effective Term:	FA 2025