

FILM1600 *Animation*: Then | Now | Next

Class Meetings are Online (no in-person lectures on campus).
 Class lectures are *asynchronous*; they do not take place at a specific time but can be accessed anytime that week (or before).
 However, quizzes are due weekly.

Weekly Modules contain each week's opening animations, lectures, readings, and quizzes. All class materials provided through CANVAS. (no required book)

[Link to Sample Class](#) (2 classes per week)

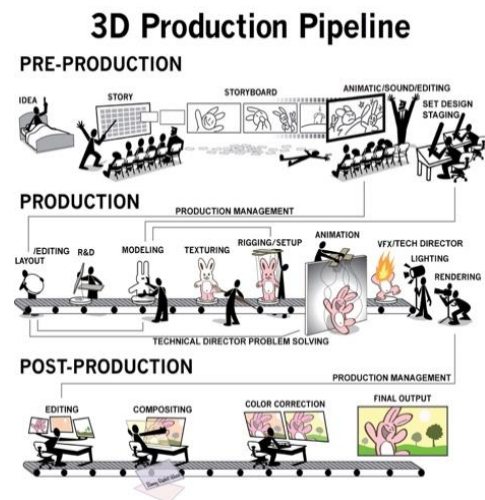


Instructor: Professor Craig Caldwell
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Course Description

Animation, by its nature, is interdisciplinary. This course is an introduction to the continuing evolution of Animation. The course investigates not only the creative and technological innovations that expand cinematic storytelling (Mickey Mouse to VFX, Rick & Morty [2D] to Anime, Games to XR). A lower-division course designed for the non-major as well as the major.

This course is not a history course but utilizes historical and current animation produced today with demonstrations of cutting-edge animation techniques. Included are industry lectures to reveal how Animation has evolved and is changing the future of digital media (Games, XR).



Course Objectives

Animation techniques have evolved from simple cartoon drawings to 3D VFX. Today this evolution continues as it is rapidly being integrated into XR. From Animation's beginnings, each new technological innovation extended the creative possibilities for storytelling (Animation was the first to use color film, sound, etc.). This course reveals what goes on behind the scenes in the animation industry as well as the similarities of those processes to other disciplines.

Animation previously was the domain of large studios with an army of artists; today we have access to more power on home computers than was used to make *Jurassic Park*. This class will demystify the process so students to understand the creative and technical priorities behind the work, how to view Animation if they wish to use it their own future presentations, or even the option to begin animating on their own.

Course Methodology

Fundamental concepts and components of Animation will be covered in lectures, clips of animation examples, viewings, and a discussion. A series of presentations, demonstrations will explain how Animation is created and how the animation pipeline brings all the parts together. CANVAS contains the full syllabus, articles, and references for this course. CANVAS links with readings, animation clips, lectures, discussion, quizzes, and final.

Weekly Quizzes (in place of Midterm) and Final Exam

Online Quizzes may be taken anytime during the week they are due. They remain open until the very end of that week (11:59 pm Sunday, the same time and day every week). Working ahead is a great idea as quizzes are open several weeks ahead of its close date during the semester. (See Grading specifics below) This permits students to take quizzes ahead of time so they don't miss the due date for any personal or athletic conflicts that may arise. Each Quiz, as well as the online Final Exam, may be taken twice. Each student must complete their own work!

Instructor Bio

Craig Caldwell, USTAR Professor, Digital Media Cluster, University of Utah. Co-founder of the UofU Masters in Games Program Entertainment Arts & Engineering. Industry experience: Head of Creative Training at Electronic Arts, Tiburon Studio, Orlando, FL, and 3D Technology Specialist, Walt Disney Feature Animation (*Mulan, Tarzan, Chicken Little, Bolt, Meet the Robinsons*), Burbank, CA. Academic background includes the Head of the largest Film School in Australia at Griffith University. The Griffith Film School is known for its interdisciplinary program in Film, Animation, and Games. Previously was Chair of the Media Arts Department at the University of Arizona and Associate Director, New Media Center. Conference presentations include Comic-Con '18, SXSW '18, Mundos Digitales '13-'20,'22 SIGGRAPH-Asia '14-'16, SIGGRAPH '14,'16,'18,'20 FMX '13-'23, GAFX '17 (Bengaluru), Kre8tif! '17 (Kuala Lumpur, Malaysia), and IS3 '17 (Seoul, Korea). He has presented his story workshop at Electronic Arts Studio, Salt Lake City, and Disney Interactive Studio. His book *Story Structure and Development – A Guide for Animators, VFX Artists, Game Designers, and Virtual Reality*, published 2017, CRC Publishers.

Course Organization – weekly modules

Module 1

Introduction and Overview of Animation (and the course) What is Animation?; technically, culturally, historically, artistically? When someone says Animation, what do we think of first? Most likely, an early example of Animation, something that has become ubiquitous in the culture... Mickey Mouse? Maybe I am dating myself; would it more likely would be Simba, Woody, or Buzz for you?). We often refer back to something from our childhood that defines the concept of the culture. Animation is not confined to just movies today. It is embedded in all screen media. It is not exclusively an entertainment medium but is used in VFX, business presentations, education, visualization, etc.

Module 2

The Animation Pipeline. The production process in Animation has much in common with the processes in other disciplines (Pre-Production, Production, Post-Production, Distribution); compare and contrast. How has the animation process changed in the last 100 years (or not changed)? How similar and different are the 2D versus 3D animation process? Included is a primer on the work habits of a traditional hand-drawing artist vs. a contemporary 3D animator. Comparing the animation pipeline from the early 1994 *Lion King* to the 2019 *Lion King*.

Module 3

Creating Animation (Principles) In any discipline, there are foundational principles. Audiences know it is not real, but when done right, we go along for the ride. What makes Animation convincing (i.e., anticipation, timing, squash & stretch, etc.)? For example, 'timing' determines the weight, size, and speed of an object while the pose of the human body communicates a character's emotional state. What concepts do professionals use to determine if success (in animation realism is first judged by the feeling of 'weight' in the characters. In your discipline what is the benchmark? In Animation, techniques include acting, silhouette, line-of-action, straight vs. curves, exaggeration, Cartoon Physics, Realism versus Believability, etc.

Module 4

Skills of an Animator: There are many skills an animator needs to know: Storyteller, Graphic artist, Cinematographer, Sound, Set Designer, Editor, Computer Logic, but one of the most important is Acting. An early cliché was that "an animator is an actor with a pencil." What is rotoscoping? Motion capture versus keyframe animation. What are the fundamental acting techniques? What to look for.

Module 5

Story Ed Catmull, President of Pixar (UofU alum) said If everyone agrees that story is the most important thing... how does that affect behavior? How are the elements of a story used in Animation – the sequence of connected events, that leads to conflict, forcing choices, that builds to a climax that results in a change. What is Story Development? What do audience expect? How do audience react? What is the unspoken contract between director and audience? How do writers and directors use their own experiences in crafting story?

Module 6

Film Elements and Animation: Editing and Shot types in creating your own films/animation. Early editing approaches in film. What is 'cutting on action', and how is it done? Deleted storyreels – Why? Previsualization in the pre-production animation process. Staging, rhythm, and continuity; how do they all work together? Film elements are fundamental to the storyboarding process in Animation. Storyboarding is a means of visual storytelling.

Module 7

Visual Design, Lighting, and Color Each art form incorporates concepts from previous ones. Animation drew upon Art. Art embodies fundamentals such as composition and design that are used for layout and blocking in Animation. Concept Art references drawing ability and Character Design utilizes sculpture techniques. Animation environments resource architecture. This week we look at how other fields are resources. Lighting in Animation is much more closely related to Theatre than a live-action film. One needs to be aware of cultural and psychological associations of color in visual communication. What is a Color Scheme, and how are they used? What are those fundamentals that can be repurposed when creating for visual communication?

Module 8

Animation Types and Techniques: Each technique lends itself to specific storytelling concepts. '2D Animation' (hand-drawn) exploits what it does best in comparison to other techniques – text/verbal. 'Motion Graphics' is not about character or story but motion. Its strength is the communication of information and education. 'Stop Motion' works well with more reflective ideas.

Module 9

Animation Genres (1) Independent (2) Eastern Europe, (3) Anime, and (4) Experimental. Each approach embodies animation styles that best suit their points of view. Independent animations are primarily defined by personal or socially responsive point of views. Eastern European Animation embodies not just the more socially oppressive aspects of a culture but also the strength of family. Anime (Japan/Asian) uses a stark, graphic quality that upholds and preserves their views and beliefs. Experimental/Art animations are categorized by their rejection of animation conventions and the incorporation of other artistic points of view.

Module 10

Sound in Animation: Dialogue, Sound Effects, and Music: The purpose of Sound is to clarify the action, enhance the experience, and shape emotion for the audience. There are three sources of sound for Animation: sound effects, music, and dialogue (spoken language). Music tells an audience what to feel. There are three types of songs in Animation: Set Piece songs (part of the realistic action), Music as Background (used to introduce an idea), and Narrative Oriented song (which is information) Dialogue is supposed to sound like real conversation, but it is not (purpose is far more about information [Language and Communication]). Sound Effects are a distinct form of information that adds to the realism but does not necessarily use real sounds. How is this possible?

Module 11

VFX (Visual Effects) and Compositing: Post-Production/VFX expands story possibilities. The techniques of VFX and Animation overlap significantly. In 3D, often the software is the same. The History of VFX is not about visualizing characters but the illusion of dust, water, fire... anything that is made up of particles. It could be clouds or fur. In *Iron Man*, getting into the suit was a huge part of the believability. As VFX gets better, it is confronting the Uncanny Valley.

Module 12

Scientific Visualization Sometimes known as the visual simulation of three-dimensional phenomena, such as architectural, meteorological, medical, or biological systems. It is concerned with the interactive display and analysis of data. As an emerging science, its strategy is to develop fundamental tools for real applications. The insights gained in this field often find their way to feature films several years later.

Module 13

Games and Real-Time Technology What are the underlying technologies of real-time imagery, and how are they evolving? Using gaming assets and technology for "machinima" productions: Exactly how big is the game industry? How is the animation industry changing? What is it like to work in a game studio? Video games use all the same texturing, lighting, and modeling software techniques as Animation in films. The main difference is that the software must generate the images in real-time as opposed to rendering feature animation frames, which can take many minutes.

Module 14

The Industry: then, now, and next. The studios; who is making Animation and VFX? The production companies: large and small; Worldwide production; Academia - its role, future, impact; The professional organizations: Visual Effects Society, ASIFA-Hollywood, SIGGRAPH, etc.; Marketing, Distribution, Agents, and hucksters.

Module 15

Final Exam – questions taken from the weekly quizzes.