

UNIVERSITY OF CALIFORNIA
College of Engineering
Department of Electrical Engineering
and Computer Sciences
Computer Science Division

CS 294-7

The Art Of Animation

Professor Brian A. Barsky and Laurence Arcadias

Fall 2002
Overview

Class time and place

The class is on Mondays, from 3 pm to 6 pm, in 380 Soda Hall. The first class is August 26 and the last class is December 2. There will be no class on Sept. 2 (Labor Day) nor on Nov.11 (Veterans Day).

Computer lab

The computer lab is located in 111 Cory. It is open from 7:30 am to 6:30 pm and is accessible by cardkey outside those hours. This multimedia instructional lab comprises:

six Apple PowerMac G4 computers
(each with 1.5 GB RAM, SuperDrive, 867 MHz CPU, NVIDIA GeForce2 MX graphics card, 80 GB hard drive, and a 250-MB ZIP drive, running MacOSX 10.1)

eight Windows 2000 computers
(each with Pentium III 931 MHz CPU and 256 MB RAM)

Instructors

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Course Summary

This hands-on animation course is intended for students with a computer science background who would like to improve their sense of observation, timing, and motion through the real art of animation to create strong believable animation pieces. A good understanding of motion is an important foundation for using computers and technology to their full potential for the creation of animation. This class is also emphasizes artistic and aesthetic creativity, intending to push the boundaries of the imagination and to familiarize students with storytelling. Some time will be spent on screening international animated for inspiration and to learn a variety of styles and techniques.

Lectures will be accompanied by simple step-by-step exercises on paper in weight, speed, and timing.

In this class, students will learn:

- The importance of the bouncing ball to obtain weight
- Spacing and timing
- Anticipation/action/reaction
- What squash and stretch does to animation
- The importance of exaggeration (or interpretation) of reality to communicate an idea
- The importance of sound to convey an idea and improve animation
- Basics of character design
- How to build believable walk cycles with personality

During the second half of the semester, each student will develop a small project of his or her own with a small story line. Since animation is time consuming, it is not advisable to attempt to create a piece that is too long or too complex. Instead, students should concentrate on projects that are still challenging but can be nonetheless done successfully.

Students are encouraged to keep an open mind of creative experimentation to fully appreciate this class.

Class structure

This is a three-hour class. The first hour will comprise exercises review, lecture and screening, and then the second and third hours will be workshop where the students will animate simple exercises with one-on-one advice and critiquing.

Assignments

Ongoing assignments include reading, discussion, animation exercises, presentations, and other class work as appropriate. Students are expected to spend 8 to 10 hours a week outside the class working on their assignments and reading the material.

Textbooks

Required:

Harold Whitaker and John Halas

Timing for Animation

Focal Press

Woburn, Massachusetts

2002

Richard Williams

The Animator's Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators

Faber and Faber

London

2001

Recommended:

Preston Blair

Cartoon Animation

Walter Foster Publishing

Laguna Hills, California

1994

Lynn Pocock and Judson Rosebush

The Computer Animator's Technical Handbook

Morgan Kaufmann Publishers, Inc.

San Francisco

2001

Richard Taylor

The Encyclopedia of Animation Techniques

Running Press

Philadelphia

1999

Frank Thomas & Ollie Johnston

The Illusion of Life

Hyperion

New York

984

Materials that you will need

For the flipbook exercise:

- One or two packages of **white unlined** index cards (**5x8**)
- **A good drawing pencil:** Ebony pencils are soft and give a black line. You will need to sharpen the point quite often, so you may need to invest in a sharpener (either an electric sharpener or a little metal sharpener).
- **One eraser:** It should work for your pencil.
- **Some drawing materials:** water-soluble markers, colored pencils, pastels, etc. This is up to you and will depend on what materials you want to use for the flipbook. Some people may find that working with a black pencil is all that they need. Wait until we begin the flipbook project to purchase these materials because then you will have a better idea about what you will want.
- **Some tape:** to mark / register your cards

For ongoing exercises:

Most of these materials can be found on line at: <http://cartooncolour.com/>

- Paper: 12 Field Size, 500 Sheets (1 ream) 10-1/2" x 12-1/2" PUNCHED
- Animation peg bars
- A field
- Black pencils
- Blue pencils
- Eraser
- Sharpener
- VHS videotapes, ZIP disks, and CD ROMS to record and show your work.
- Sketchbook.

Grading:

Students will be evaluated on the following criteria:

Quality of work and understanding of the problematic of the exercise

Attendance

In-class participation

TENTATIVE CLASS SCHEDULE:

Class 1

General Introduction: definition of animation

Requirements for being an animator

Presentation of the class: syllabus and assignments.

- **LECTURE:** Introduction to different animation techniques and style.
Canadian animation and NFB (National Film Board)

bring index cards and pencils for next class

Class 2

Different methods of animation: straight ahead / pose to pose method, and production process.

- **LECTURE:** explanation of different methods of animation. Keys, extremes, inbetweens, etc. (cf: *The Animator's Survival Kit*, pp. 41 to 69) and screening films
- **WORKSHOP:** flipbook on index cards

Class 3

Weight / speed / texture. Spacing.

- **LECTURE:** (cf: *The Animator's Survival Kit*, pp. 35 to 40 and 260-261) plus film screening
- **WORKSHOP:** use lines to animate: a log, a string, a leaf falling down and a bouncing ball

Class 4

Timing: anticipation / action / reaction

- **LECTURE:** (cf: *Timing for Animation*, pp. 26 to 37 and *The Animator's Survival Kit*, pp. 256 to 284) and screening.
- **WORKSHOP:** animate a heavy square moving and crashing on an obstacle and a light square moving and stopping. Use humor to give personality to the square.

Class 5

Squash and stretch and review of the twelve principles of animation.

- **LECTURE:** (cf: *The Illusion of Life*, pp. 47 to 70) and film screening.
- **WORKSHOP:** sack pantomime: animate a flour sack expressing different feelings

Class 6

Basic walk cycle:

- **LECTURE:** (cf: *The Animator's Survival Kit*, pp. 102 to 155) and film screening:
- **WORKSHOP:** Sketch out and study people walking plus walk cycle animation

Class 7

Walk with attitude

- **LECTURE:** (cf: *The Animator's Survival Kit*, pp. 156 to 175) and film screening.
- **WORKSHOP:** videotape people walking, compare different types and personalities. Animate an expressive/fun walk

Class 8

Lipsynch. How to make a character talk and the use of accents and body language.

- **LECTURE:** (cf: *The Animator's Survival Kit*, pp. 304 to 326) and screening.
- **WORKSHOP:** videotape people walking, compare different type and personality. Animate an expressive/fun walk
- *Each student will be asked to choose a topic from Classes 9 to 14 (or other suitable topics) and do an exposé for the class.*

Class 9

- Storyboard and storytelling
- Final project: in groups of 1-3: students are free to choose topics but they must first submit a script for approval.

Class10

- Special effects in traditional animation: how to do rain, snow, explosions etc...

Class11

- Layout and landscape

Class12

- Sound in animation

Class 13

- Variety of films : pixilation, claymation, paint on glass, sandboxes, 2D/3D

Class 14

- Animation from different countries: Japanese, western European, Canadian animation, etc.

Class15

- General project review

Assignments:

1. Flipbook on index cards: **Due on week 4**
2. Gravity exercise: objects falling down and bouncing ball. **In class**
3. Animate a heavy square moving and crashing on an obstacle and a light square moving and stopping. Use humor to give personality to the square.
Due on week 5
4. Workshop: sack pantomime: animate a flour sack expressing different feelings. **Due on week 7**
5. Walk cycle animation. **Due on week 9**
6. How to make a character talk and the use of accents and body language.
Due on week 10
7. Final project film. (7 weeks) **Due on week 15**
8. Each student will have to choose a topic from the weekly list and present a 20-minute talk to the class. Check the time sheet for due dates.