

San José State University
Animation/Illustration – Department of Design
ANI Intro to 3D Animation

Course and Contact Information

Instructor:	Michelle Meeker
Office Location:	ART 213
Telephone:	Email only please
Email:	Michelle.Meeker@sjsu.edu
Office Hours:	Mon 5:50pm to 6:20pm
Class Days/Time:	Mon Weds 12pm to 2:50pm
Classroom:	ART 224 (Mac Lab)
Prerequisites:	Animation and Illustration Declared Major only

Course Format

Important Web Pages and Class Messaging

ANI Program Google group (mandatory for ANI students): www.shmgoogle.com
<https://3dbasics.wordpress.com/>

Assignments, announcements, files and grades will be posted on Canvas
Assignments should be uploaded weekly on Syncsketch.com

Course Description

Basic concepts and professional practices used in 3D computer animation. Application of traditional principles of animation to the 3D digital environment. Prerequisites: Allowed declared Animation major only Misc/ Activity: 6 hours activity

Course Goals

This class will introduce students to basic concepts and practices currently used in the field of 3D computer animation. Today, 3D Computer animation is a very dynamic and heavily interdisciplinary field, involving fine arts, science, mathematics, physics, acting and animation. In this class, we will focus our attention on how to create believable movement by applying the traditional principles of animation to the 3D digital environment and using the computer as a tool to animate.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

1. CLO#1: Demonstrate through their animation assignments that they can apply the following 2D principles of animation to 3D scenes: arcs, timing, spacing (slow in, slow out), squash and stretch, staging and overlapping action.

2. CLO#2: Create believable scenes in 3D depicting: a bouncing ball; two balls bouncing with different weights; an a flexible moving whip; a ball bouncing with an overlapping tail; a basic human walk; a personality walk.
3. CLO#3: Give constructive feedback on their peers animations, using correct animation terminology.

Required Texts/Readings

Textbook

The Animator's Survival kit

By Richard Williams

Published by Faber and Faber

ISBN 0-571-20228-4

ISBN 0-571-21268-9

Simplified Drawing for Planning Animation

By Wayne Gilbert

Published by Anamie Entertainment Ltd

ISBN-10: 097134390X

ISBN-13: 978-0971343900

The Illusion of Life – Disney Animation

By Ollie Johnston and Frank Thomas

Publisher: Disney Editions; Revised, Subsequent edition (October 19, 1995)

ISBN-10: 0786860707

ISBN-13: 978-0786860708

Other technology requirements / equipment / material

-3D characters:

Please purchase the “Body Mechanics Rig Mega Pack” by Joe Daniels, from gumroad. We have a discount, so when you check out please enter the code sjsudiscount for a 30% discount. Here's the site:

<https://gumroad.com/l/xhRK#>

- An **external drive** to store and back up classes. It doesn't need to be a new one or exclusive to this class. Just any drive where you have a folder to store class files from 51b

- **Sketch book and pencils** for drawing.

-You will be required to shoot video reference for some of the assignments. Please be prepared to do so, usually a smart phone will be perfect for it.

-**Download Filmic Pro** (or similar) for your smart phone. This software will allow you to shoot video at 24fps which is the frame rate required for this class.

<https://itunes.apple.com/us/app/filmic-pro/id436577167?mt=8>

- The latest version of **Maya** is available in all computers in the animation lab on campus. If you want to download Maya to your computer it is free. But make sure your computer has the system requirements required. I suggest Maya 2016 or Maya 2018.

- **Adobe creative suite** and **Microsoft Office or Open Office.**

You will need the ability to perform a simple film editing on your shots and to design textures for your characters and props. Also you will need a good text editor. Please download Microsoft Office suite and Adobe Creative Suite and have it installed in your personal computer. It is free for SJSU students:

<http://its.sjsu.edu/services/software/>

Course Requirements and Assignments

“Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.”

Final Examination or Evaluation

A final project will be required for this course. The final project will consist of a class demo (quicktime movie) with a compilation of the final version of all assignments produced during the course.

Grading Information

Specific Assignments and instructions will be given in class. There will be weekly

assignments, readings and critique of student work. Some assignments may require group work.

Presence in class is essential since most projects will be collaborative and require presence in class for group meetings, reviews, critiques and discussions.

Projects: Students will complete a series of small assignments, and one major collaborative design project. Each will require the student to respond to a proposed narrative (text, story idea, or storyboards) with a prescribed combination of visual research, supporting organizational assets (spreadsheets, plans) and original artwork (storyboards, designs) Guidelines, techniques, strategies and further details will be provided by instructor. The major design project will serve as the course final.

Grade will be determined following this formula:

10% = Heavy and Light bouncing balls

10 % = Ball with tail

20% = Basic Walk cycle

30% = Personality walk

20 % = Final reel with all animations, including any revision you want to present

10 % = Participation and overall engagement with course and class

Determination of Grades

A grades indicate excellent work.

B grades indicate above average work.

C grades indicate average work.

D grades indicate below average work.

F grades are failing.

A plus = 100% to 97%

A = 96% to 93%

A minus = 92% to 90%

B plus = 89% to 87%

B = 86% to 83%

B minus = 82% to 80%

C plus = 79% to 77%

C = 76% to 73%
C minus = 72% to 70%
D plus = 69% to 67%
D = 66% to 63%
D minus = 62% to 60%
F = 59% to 0%

Classroom Protocol

Animation/Illustration Program Policies

Students must arrive to class on time with materials ready to work.
Cell phones must be silenced.
Private conversations during lectures and class discussions are not permitted.
No checking email or using laptops for activities unrelated to the class.
No playing personal audio through speakers, use headphones only.
Do not prop open any doors.
Do not leave valuable items unattended.
Do not leave the classroom without cleaning your area.
Be courteous to others, keep private conversations quiet.
Aromatic foods are not allowed in any of the classrooms or labs.
Please be attentive to your personal hygiene.

Computer Labs: Violation of rules will result in loss of lab access for the whole semester

No food or beverages by the workstations.
Do not change the connections on the equipment.
Do not move any equipment in the lab.
No traditional painting.

University Policies

Per University Policy S16-9 (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <http://www.sjsu.edu/gup/syllabusinfo/>

ANI 51b Intro to 3D animation
Spring 2019

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
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1. sign up for Pixar in a Box (free, Khan academy course); do the whole “Intro to Animation section” (40 min)

Hands-on practice:

2. open Maya and do an interface assignment TBD
3. Buy course supplies

4. Order books required for course ASAP

1 Hands-on practice:

1. SPACING: Slow in and slow out with simple geometric shapes falling vertically (translation and rotation) (60 min). Shapes should be visible at the same time on screen, and animation of each happens simultaneously, each one with a different acceleration and deceleration.

2. Same idea above (on another movie) file using rotation instead of translation

* that means you will submit two different playblast movies, one for translations, another for rotations

Reading: Pages 84-89 of The Animator’s Survival Kit

Online:

Please do the following Playblast tutorial (30 minutes):

https://area.autodesk.com/tutorials/playblasting-animation-in-maya/

2 Online:

1. Victore Navone Splinophilia Part 1:

http://www.navone.org/HTML/Tutorial_Splines1.htm

Hands-on practice:

Ball rolling and coming to a stop (physically correct and believable)

* Optional plus Rolling balls assignment:

1. one light ball and one heavy ball in the same scene - rotation and translation at the same time

Sketchbook

<ol style="list-style-type: none"> 1. In your sketch book, draw from observation people eating or talking at the SJSU cafeteria. Drawings don’t need to have a lot of detail, please try to capture their overall posture and pose only. Minimum of 6 sketches.
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2 Hands-on Practice

1. Ball bouncing in place, physically based, loosing height as time passes (no squash and stretch)

2. Challenge assignment: falling cube (cube falls and bounces once or twice)

*use graph editor to edit your curves and transparencies to check your spacing

Readings:

Read pages 92-94 from the book “Animator’s Survival Kit”

Sketch Book:

<ol style="list-style-type: none"> 1. Read pages 11 to 10 of the “Planning Animation book” and study how to simplify your drawings by copying the drawings in these pages, paying attention to the basic shapes the author uses to form the figure

3 Hands-on Practice:

1. Refine/Adress notes in vertical Bouncing Ball Assignment

2. First pass on Ball bouncing across the screen (no squash and stretch)

3. Maya Projects Tutorial (30 min) : [https://area.autodesk.com/tutorials/ series/maya-2018-tips/about-maya-projects/](https://area.autodesk.com/tutorials/series/maya-2018-tips/about-maya-projects/)

Readings:

1. From “The Illusion of Life” read Chapter 3, pages 47 to 70

Sketchbook:

1. Using the basic lines and shapes described in pages 6,7 and 10 of the book "Planning Animation" try to create your own characters, and also try to modify the poses just a little bit. Minimum of 8 sketches with variations of the drawings from the book.

3Hands-on Practice:

1. Animate a VERTICAL Bouncing ball with Squash and Stretch
 2. Animate a bouncing ball with squash and stretch going across the screen
- *you can use your original bouncing ball assignments and simply add squash and stretch

Sketchbook:

1. Study pages 11-15 from the book "Planning Animation". Choose your favorite 6 drawings and copy them in your sketchbook paying attention to the basic shapes the author uses to construct the figure.

4Graded Assignment:

1. Bouncing Ball – FOR GRADES

Animate two bouncing balls, using squash and stretch, making sure you show the difference of weight/mass in between them: one ball should be very heavy and the other one very light. They both should ball across the screen, and they both should have squash and stretch. Please shoot video ref and plan for this assignment on paper before animating on the computer!)

One due date, please bring your video reference, a JPEG image showing your planning thumbnails, a quicktime with your final assignment. This assignment will be graded (20% of your total grades)

For next class, please bring video reference, planning and a first pass blocking with your top and bottom positions, and correct timing and spacing for at least one of the balls (not need to add squash and stretch yet).

Readings: pages 253-256 of the Animator's Survival Kit

4Graded Assignment:

Finish you Heavy and Light assignments for grades. Polish your animation and create a clean playblast for presentation. Submit your final scene via Syncketch.

5Sketchbook:

Draw from observation people playing at a park (sports, kids, frisbee etc) Remember the basic shapes and line the author of "Planning Animation" uses to construct his sports sketches? Try to do simplified sketches using similar techniques - basic construction shapes like circles, ovals and cubes to design the head, hips, chest or torso. simple lines for legs and arms.

5Hands-on Practice:

1. with sideways translation of the base (driving force)
2. Revise your side to side swing and make it perfect! Re-do it if you need.

Sketchbook:

Read pages 15-21 of "Planning Animation". Choose 4 drawings and copy them to your sketchbook, paying attention in how you are drawing the opposite forces.

Readings: pages 217-241 of the Animator's Survival Kit

6Hands-on Practice:

1. Arm Studies (arm swinging side to side as when we walk; extreme positions should be in frames 0-12-24-36-48 etc). What is the difference between our arms and a swinging pendulum?
2. Start on the ball with tail assignment. Plan on paper and do a first pass blocking

Sketchbook:

Draw people carrying things OR people pushing things OR people pulling things. The best is to find the real action in the real world (maybe at a store, construction site or somebody moving next door?). If you can't find reference in the real world use roommates or pictures for reference.

6Graded Assignment:

BALL WITH TAIL DUE FOR GRADES!!!

The final version of your ball with tail assignment will be graded (10% of your total grades)

Please present a clean and well staged assignment in the next class

7Reading:

Read from Richard Williams "Walks" section, pages 102- 117

Hands-on practice:

record video reference of your own walk

find your positions in the video and check what frames they fall on (make sure your are shooting video at 24fps)

7Hands-on Practice:

Keep going with the blocking for the Walk Cycle using "auto"curves - legs and hips only - extend your animation to frame 72, keeping steps on the same intervals (a new pose at every 3rd frame).

Sketchbook:

Read pages 45-52 of "Planning Animation". This section shows a simplified way to draw the torso. What is important for us, animators, is to show the orientation of your torso in your drawing - and sometimes the hips are turned one way while the chest is turned the other way... use reference of great torso poses and try to apply the ideas from the book. Minimum of 8 sketches.

8Hands-on Practice

1. Refining legs on your Walk Cycle all the way to frame 72

Sketchbook:

Read pages 53-55 of "Planning Animation". This section shows a simplified way to draw legs and feet. use your own reference depicting fun poses and try to apply the ideas from the book in your own sketches. Minimum of 8 sketches.

81. Add upper body animation to your whole walk cycle, all the way to frame 72

We will use next week to learn about lighting and rendering.

Meanwhile, please keep polishing your walk, so that the animation is very gracious and fluent, with perfect weight shift, flexibility on spine and arms, etc.

Sketchbook:

Read pages 56-58 of "Planning Animation". This section shows a simplified way to draw hands. use your own hand as reference and try to apply the ideas from the book for different poses. Minimum of 6 sketches.

9Hands-on Practice

1. Place lights in your Walk cycle scene. Test your lights in different frames.

Sketchbook:

Read pages 59-60 of "Planning Animation". This section shows a simplified way to draw the arms and rib cage. Find a park or other place where people play (sports, frisbee etc) and draw their poses, trying to apply the ideas from the book. Minimum of 8 sketches.

9Graded Assignment:

Finish your Walk cycle animation, add lights and shadows and make it look good. Turn your scene rendered and polished.

Readings: pages 118-131 of of the Animator's Survival Kit

10Hands-on Practice

1. Prepare and research for your character walk:

- think of a character and a context for the walk;
- write a paragraph describing your character and context for your scene. We are particularly interested in personality traits and situations that inform the way the character walks
- shoot video reference for your walk. make sure to shoot your video at 24fps
- analyse your video and plan your shot on paper
- for next class upload all of the above to synsketch before class starts

Readings: pages 135-175 of the Animator's Survival Kit

10 Hands-on Practice

1. First pass blocking for personality walk

Set main poses for legs, hips and spine (hide arms please)

Attention to hip movement, timing and pacing, size of stride and step, and weight shifts

Sketchbook:

Read pages 62-64 of "Planning Animation". Have some fun drawing your own simplified characters. Use your imagination! Minimum of 8 sketches.

11 Hands-on Practice

Work on your personality walk and bring both your Maya scene and playblast for review every week in class. Improve your blocking pass and add more detail. Make sure the foot is flexible, and add overlapping on toes, and work on the "peel off" of the feet from the floor (if it applies to your walk). Improve blocking of hips and torso.

11 Hands-on Practice

Finish blocking and start working on your polishing pass. Add arm animation. If your character is holding any props, add props. If you want, add a costume (using a texture file).

Please note that

Sketchbook:

Read pages 65-68 of "Planning Animation". This section is about center of gravity and weight distribution. It is important to be aware of them when drawing/planning for animation! Look for pictures with interesting weight distribution and draw them marking where the center of gravity is in each drawing. Minimum of 8 sketches.

12 Hands-on Practice

From now on, work on polishing your personality walk and bring both your Maya scene and playblast for review every week in class. Add clothes to your character if needed. Work on your lighting in preparation for rendering. This assignment is due in FINALS.

Sketchbook:

Read pages 71-75 of "Planning Animation". This section is about line variation and quality of line. Use these ideas to sketch people or objects in movement (car moving fast or breaking for example, a toaster falling, a cookie jar exploding!) Minimum of 8 sketches.

12 Hands-on Practice

Finish blocking and start working on your polishing pass. Add arm animation. If your character is holding any props, add props. If you want, add a costume (using a texture file).

13 Hands-on Practice:

1. Work on personality walk

2. Review old assignments for final class reel

13 Hands-on Practice:

1. Work on personality walk

2. Review and render old assignments for final class reel

14 Hands-on Practice:

1. Work on personality walk

2. Review and render old assignments for final class reel

14 Hands-on Practice:

1. Work on personality walk

2. Review and render old assignments for final class reel

15 Hands-on Practice:

- 1. Prepare final class reel.
- Assignments that should be in your final class reel:
 - 1. title card with your name, course number, semester and year
 - 2. rolling ball
 - 3. bouncing ball in place with squash and stretch
 - 4. bouncing ball across the screen with squash and stretch
 - 5. heavy and light bouncing ball
 - 6. pendulum swing in place
 - 7. pendulum swing with side translation in the beginning
 - 8. ball with tail
 - 9. vanilla walk
 - 10. personality walk

2. Bring your final sketch book to class for review on the last day of class.		
15		Prepare your scenes for finals and assemble your final class reel.
Final Exam		Please consult SJSU Final exams page for the date and time of finals