ANI 51 - DIGITAL ANIMATION

Syllabus - SJSU

**Class Location:**
ART 224 (Computer Lab)

**Class meeting times:** M/W 12:00- 2:50

**Instructor:**
Michelle Meeker
michelle.meeker@sjsu.edu

**Phone Number:** please email (no phone calls)

**Office Location:** ART 213

**Office hours:** M/W 5:50-6:20PM by appt.

Please bookmark our resources site for this course on your browser:
https://3dbasics.wordpress.com/

1. **Course Description**

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.

2. **Course Goals and Student Learning Objectives**

By the end of this class students should be able to:
- Navigate with fluency the basic Maya interface, with focus on animation module
- Be able to create simple but believable animation using objects, using the principles of animation
- Be able to create a basic walk cycle for a biped character
- Be able to create a Personality walk for a biped character
- Understand how to set key frames, save and playback animation in Maya
- Understand the basic workflow for 3D animation using Maya

3. **Course Supplies**

- A USB flash drive or external drive for storing DATA; (8 GB recommended)
- Sketch book and pencils for drawing.
- 3 Sheets of transparencies and dry eraser (2 different colors)

- The latest version of Maya is available in all computers in the animation lab on campus.

- You will be required to shoot video reference for some of the assignments. Please be prepared to do so, making sure you have some kind of device to record video. This device could be a mini-Dv cam, a webcam or a digital camera that can shoot video. If you don't have one, think of someone that can help you with shooting video reference for class.

- As part of the SJSU Animation/Illustration program, in this class, as well as every other, it is expected that you possess the Adobe Creative Suite and will utilize it at some point in executing your projects for this class. It should be installed on your laptop along with the Microsoft Office Suite.

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

4. Required Books

The Animator's Survival kit
By Richard Williams
Published by Faber and Faber
ISBN 0-571-20228-4
ISBN 0-571-21268-9

Simplyfied Drawing for Planning Animation
By Wayne Gilbert
Published by Anamie Entertainment Ltd
ISBN-10: 097134390X

How to Cheat in Maya 2013
Please download the whole book and save to your computer or external drive.

Animation - The Mechanics of Motion by Chris Webster

Please bring these books to all classes. And keep them close to you when you are animating.

5. Characters and props

Balls, pendulum and ball with tail can be found here (FREE!):
https://www.behance.net/gallery/17774421/Ultimate-Rigs-for-Free
We will be using the Body Mechanics mega pack:
https://gumroad.com/l/xhRK#

We have a discount of $10 so students can buy all characters for $30. They are very good for the arm overlap exercise, and also for the basic and personality walk. In order to get the discount students have to write SJSU when checking out. Please note that if you are going to take ANI 128a next semester you can also use the same character in that class.

6. Online Resources

7. Course Requirements

There will be weekly assignments and required readings. Students should complete the weekly assignments and have them assembled as a class reel at the end of the semester. We will have a mid term, consisting of chosen assignments, and a final class reel. Participation in class will also be graded.

Students are expected to complete and hand in every assignment for the course. Deadline for assignments will be strictly observed. Grade for late assignments will be lowered by one letter grade if one week late. Assignments will NOT receive a grade if turned in more than one week after the due date. STUDENTS ARE RESPONSIBLE FOR KEEPING A DIGITAL COPY OF ALL SCENES AND ASSIGNMENTS. PLEASE BACKUP YOUR WORK OFTEN.

8. Attendance

Students are expected to attend class regularly. Lateness of over 20 minutes counts as an absence. Students with 3 or more consecutive non-justified absences will most likely fail the class – in three weeks we will cover a lot of ground and if you miss three consecutive weeks of classes it will be really hard to catch up later. Please send me an email (preferably in advance) if you are unable to attend class.

9. Grading Criteria

Grades will reflect a student's overall engagement with the course material from throughout the term, as determined by factors such as completion of all assignments, the quality of assignment, class participation, progress and effort. The instructor needs to have evidence that you are understanding the concepts and techniques explained in class, and that you are able to successfully use them in your animation scenes. Though we greatly value effort and participations we need evidence that you are acquiring the skills needed to move to the next level.

Students are responsible for maintaining an updated record of all completed assignments (please keep a copy of your maya scene and movie file for each assignment).

OBS: We will only give out an Incomplete if you have or are experiencing a compelling family emergency and/or life crisis, and that is clearly communicated to the instructor. In some cases official documentation will
be required (letter from a doctor, hospital records etc) If you receive an incomplete you have to complete the work on your own and have one year to submit all final materials for consideration or your grade reverts to an F (Fail).

10. Grading breakdown

Effort, participation: 20%
Mid term: 30% (bouncing ball with squash and stretch, "heavy and light" bouncing ball, Pendulum and ball with tail.
Walk Assignments 30% (due together with Demo Reel): basic walk (10%) and personality walk (20%)
Final Demo reel: 20% (all assignments done in class, in chronological order)

*please note that your final reel will account for 50% of your grades, divided between the walk assignments (30%) and all the other assignments (20%) - all of them will be part of your final class reel.

Is the student’s responsibility to keep up to date with all assignments, doing revisions whenever there’s something to be improved. Revisions after review sessions are as important as turning the assignment in on the right date.

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<thead>
<tr>
<th>Grading Percentage Breakdown</th>
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<tbody>
<tr>
<td>94% and above = A</td>
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<tr>
<td>93% - 90% = A-</td>
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<tr>
<td>89% - 87% = B+</td>
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<tr>
<td>86% - 84% = B</td>
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<tr>
<td>83% - 80% = B-</td>
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<tr>
<td>79% - 77% = C+</td>
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<tr>
<td>76% - 74% = C</td>
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<tr>
<td>73% - 70% = C-</td>
</tr>
<tr>
<td>69% - 67% = D+</td>
</tr>
<tr>
<td>66% - 64% = D</td>
</tr>
<tr>
<td>63% - 60% = D-</td>
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<tr>
<td>below 60% = F</td>
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More information here:
http://www.sjsu.edu/registrar/students/grades-grades_changes/grade_symbols_and_values/

11. Classroom Protocol

Failure to comply with the following rules will result in a one week expulsion from the lab for every student present at the time of the offense
1. Food is prohibited
2. Beverages may be kept only on the table in the front of the lab – never by the computers
3. Only students registered in digital classes or BFA are allowed in the lab
4. No internet browsing is allowed during class time. That includes social network sites, any kind of chat or instant messages, news, youtube or any other site at all. Students caught browsing the internet during class will be promptly removed from the lab.
5. A notebook and taking notes is mandatory during all lectures or when teacher is explaining a topic or giving assignment guidelines.
6. The lab is for digital class related work only (No painting, charcoal rendering, sculpting, massaging, etc...)
7. No inappropriate imagery on the computers nor dry erase board
8. Headphones only; no sounds audible to other students allowed
9. Do not disconnect, attach, rearrange, or install anything on the computer systems
   (USB and external drives are permitted)
10. The lab doors must remain closed and locked at all times
11. Cell phones should be turned off in the lab

12. Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic calendar web page located at: http://www.sjsu.edu/academic_programs/calendars/academic_calendar/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.

13. Access to the lab

The lab is accessible to your students every day of the week outside of class times, except in the times when there is a class there. The schedule of class taking place in the lab will be posted outside class, at the door.

For building access, students can use their tower id cards with the omnilock on the back side of the building near the parking lot. The classroom also has a omnilock. If students are in the class after 10 pm on the weekdays and over the weekends, they will need an after hours pass. After hour passes will be distributed by me.

14. University Policies

The link below contains university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc.

http://www.sjsu.edu/gup/syllabusinfo/

15. Friendly advice

Our program is demanding and to succeed you have to be very diligent about working on your homework for the various classes every week. Discipline is crucial. Plan a minimum of 9 hours per week of homework for each of your studio classes this semester. Homework for any art field is basically time practicing the art. Mark your “art practicing” time for each class in your weekly calendar and stick to it. If you don’t set time aside for practice you will not succeed in this program. Practicing is as important as presence in all classes.
WEEKLY SCHEDULE

All assignments should be playblasted in HD720 (you can set this in the render settings and then choose “from render settings” when playblasting. Please show a clean background (no grid, no numbers, axis and other visual artifacts). A clean/clear presentation is important for artists!

Module 1 - Interface, Basics of 3d animation (August 21st-Sept 5th)

1. INTRODUCTIONS - class of Weds 8/23 (half of first class)

Introduction To ART 051 Intro to 3D Animation;

2. INTERFACE OVERVIEW - class of Weds 8/23 (second half of first class)

TOPICS: Establishing work routines; Overview of Maya Interface (part1);
Playing with shapes, colors, scaling and moving things around; timing and spacing.

ASSIGNMENT (due on 8/28):

a) Slow in and slow out with simple geometric shapes (translation and rotation)

3. ANIMATION INTERFACE, ROLLING BALLS - Class on Mon 8/28

TOPICS: Graphic Editor and Dope sheet; Planning for Animation; Weight, gravity, speed, timing and spacing in animation; Curves and tangents in the graph editor: spline, flat, stepped, linear

ASSIGNMENTS due 8/30:

Rolling balls:

a) one light ball and one heavy ball in the same scene - rotation and translation at the same time

Module 2 - Balls

1. BOUNCING BALL – part 1 - class on Weds 8/30

First part of class - review rolling ball assignments
Second part of class - introduce bouncing balls

TOPICS: Drawing/Planning for computer Animation; How to use the transparencies and the Dry erasers to check spacing; Weight, timing, Spacing, Arcs, Easy ins and Easy outs.

*note: labor day weekend! Monday 9/4 is a holiday, no classes!
ASSIGNMENTS (due Weds 9/6):

a) Ball bouncing in place (no squash and stretch)
b) Ball bouncing across the screen (no squash and stretch)
c) Challenge assignment: falling cube (cube falls and bounces once or twice)

2. BOUNCING BALL – part 2 - class on Weds 9/6

TOPICS: Weight, Timing, Spacing, Squash and Stretch

ASSIGNMENTS due on 9/1:

a) Refine/Fix last week’s Bouncing Ball Assignment -
b) Animate two bouncing balls, 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!

For grades, please bring your video reference, a JPEG image showing your planning thumbnails, a quicktime with your final assignment.

* The bouncing ball assignments will be graded (20% of your total grades)

Module 3 - Overlapping action

1. OVERLAPPING ACTION – part 1 – class on Mon 9/11

TOPICS: Overlapping action, arcs, timing, space
a) animate a pendulum swinging in place (in class)

ASSIGNMENT due on Weds 9/13:

Animating a pendulum swing:
b) with translation of the base (driving force)

Reading Assignment: Richard Williams Chapter on Flexibility

2. OVERLAPPING ACTION – part 2 – class on 9/13

TOPICS: More on overlapping action - how to manage the graph editor
Discuss pose to pose, and straight ahead; driving force, and its effect on the overlapping action; discuss copying and pasting key frames in graph editor and staggering timing to get the overlapping effect etc. discuss how our arms are like pendulum and how they swing when we walk
ASSIGNMENT due on Monday 9/18:
  a) Applied overlapping action: Arm Studies (simple arm swing or dropping arm from the top or one of the short examples from Richard William book’s chapter on flexibility showing arms action)
  b) Bouncing ball with tail showing overlapping action

CLASS OF Weds 9/20:
Review of whatever needs reviewing; answer questions; prepare for midterm; learn how to put all your files together in a good look class reel

MIDTERM REVIEW: Mon 9/25

Prepare a class reel with the very best version of the following assignments:

  a) Bouncing ball across the screen
  b) Heavy and light bouncing ball
  c) Pendulum swing with translation of base
  d) Ball with tail

  ● Please add a title card with your name, course number and name, semester and year before the assignment

Midterm = 30% of your grades!

Module 4 - Walks

1. BASIC WALKING

Part 1: PLANNING AND BLOCKING (Class of 9/27)

steps to create animation: research, planning, blocking, animation, final touches.
Key poses for a walk, mechanics of walk Transfer of weight during a walk, balance.
Planning for Walk: video reference, richard williams readings, planning on paper.

ASSIGNMENT due on 10/2:

a) Block Walk Cycle - stepped mode - legs only (72 frames).

Part 2: ADDING DETAIL TO LOWER BODY - part 2 - (class of 10/2)

TOPICS: Mechanics of walk, hip motion, arcs; arms swing study;
ASSIGNMENT due on 10/4:

a) Refining legs on your Walk Cycle
b) In another scene, animate the arm swinging ONLY, with nice overlapping action and the same basic timing of the basic walk. (this is to prepare for next week when we will add the arms to the animation)

Part 3: ADDING ANIMATION ON SPINE, HEAD AND ARMS - part 3 - (class of 10/4)

TOPICS: Upper body animation on a walk.

ASSIGNMENTS due on 10/9:

a) Add animation on spine, neck and head;
b) Pose the hands, making sure they look relaxed; then add the arms swing to the walk; Make sure to add overlap all the way to the fingers

4. REFINING BASIC WALK - 04 - (class of 10/9)

ASSIGNMENT due on 10/17 for grades
a) Based on feedback, refine and polish your basic walk cycle animation

   Basic Walk due for grades on 10/16
   Please show it in front, side and perspective views.

2. BASIC LIGHTING

Basic lighting for Maya (class of 10/11)

TOPICS: materials, 3 point lights, light functions and light types, shadows, reflection, render settings, rendering.

   a) Render one of your previous assignments using 3 point lighting and shadows

3. PERSONALITY WALKING

Part 1: Assignment Kick off and PLANNING (class of 10/16)
<table>
<thead>
<tr>
<th>Assignment due on 10/23</th>
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<tr>
<td>a) Choose a character/context - (idea) please bring in writing who is your character and what's the context</td>
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<tr>
<td>b) Video reference and planning thumbnails for “Personality Walk” assignment (research and planning)</td>
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<td>3) Pitch your idea to the classroom</td>
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Class of 10/24: Review and discuss planning. Make adjustments if needed.

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<th>Part 2: BLOCKING</th>
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<tr>
<td>Assignment: (due 11/1)</td>
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<tr>
<td>a) Block your personality walk</td>
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<tr>
<th>Part 3: BLOCKING PLUS</th>
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<tbody>
<tr>
<td>Assignment: (due 11/8)</td>
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<td>b) Address notes on the first pass of your blocking</td>
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<th>Part 4: POLISHING From 11/9 to 11/27</th>
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<tr>
<td>Personality walk due for grades on 11/28. Please show it in front, side and perspective views.</td>
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**Classes of 11/29 -12/11:**
review assignments for Final Class reel; fix all problems on assignments; light and render all shots in HD 720; work on problem areas.

**FINALS:**
Please bring your class reel with:
 a) the best version of your midterm assignments
 b) your basic walk (sideview, front view and perspective view) (ok to repeat 2 times each view if needed)
 c) you personality walk. (side view, front view and perspective view)(ok to repeat 2 times each view if needed)

Reels should be in quicktime movie, rendered in HD720. Music ok but not mandatory. Please add a title card in the beginning with your name, course number and title, semester and year.