

Introduction to Computer-Aided Animation

CAP 3034 Class Number: 11323

Credits: 3

Class Periods: M,W,F | Period 2 (8:30 AM - 9:20 AM)

Location: MWF CSE E231

Academic Term: Spring 2023

Instructor: Rong Zhang

- Office location: CSE E526
- E-mail address: rzhang@cise.ufl.edu
- Phone number: 352-294-6680
- Office hours: M period 4 & 5 (10:40am– 12:35pm) or by appointment

Peer Mentors:

- Maloney, Lily
- Woehler, Chrystina

Course Description

Introduction to topics related to computer-aided animation. Rigging for forward and inverse kinematics. Skin weighting. Morph targets. Expression-driven animation, rigid-body and particle simulation.

Course Pre-Requisites / Co-Requisites

Pre-requisites: MAC 1147 Precalculus: Algebra and Trigonometry, or equivalent

Course Objectives

At the end of the semester, students are expected to be able to

- Familiar with the history of animation and computer animation
- Understand elemental topics in physics and geometry related to 3D animation
- Understand the 3D computer animation techniques and algorithms
- Implement and rendering 3D computer animations using Blender

Materials and Supply Fees

Course materials developed by the instructor and other online materials are available on Canvas (Free)

Required Software

- Blender, available in UF CIRCA Lab and can be downloaded from <https://www.blender.org/download/>

Recommended Materials

- N/A

Course Schedule

Week 1:	Introduction to animation and computer animation
Week 2:	Motion Graphs, Key framing
Week 3:	Animation curves, Hierarchical animation / Quiz 1
Week 4:	Motion path animation
Week 5:	Driven keys / Quiz 2
Week 6:	Skeletons, Forward and Inverse kinematics
Week 7:	Skinning and rigging / Quiz 3
Week 8:	Morph Shape
Week 9:	Facial Animation
Week 10:	Waling cycle / Quiz 4
Week 11:	Storyboards, Euler Angles and Quaternions
Week 12:	Rigid-body dynamics / Quiz 5
Week 13:	Physics based animation, Metaball
Week 14:	Lattice Boltzmann Method, Non-linear editing / Quiz 6
Week 15:	Render, Review

* There might be a shift in topics depending on the backgrounds or interests of the students.

Attendance Policy, Class Expectations, and Make-Up Policy

Class attendance is required. If for some reason you have to miss a class, you are responsible for getting class notes from a classmate. Make sure to submit your completed work before the due date to avoid a penalty if an assignment is due. Cell phones should be turned off or set to vibrate. Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

You may discuss assignments with other students. But you must implement it by yourself. If your work is proven to be copied from another student, 0 points will be given to both students.

Late assignments will be accepted with a penalty of deduction of 20% of the maximum point value every 12 hours, for up to 2 days.

There will be 6 20-minute quizzes given during lectures. No notes, books, or other assistance will be allowed during the quizzes. There will be no makeup quizzes. The lowest quiz score will be dropped from your final grade. **The dates for quizzes are: 1/27, 2/10, 2/24, 3/24, 4/7, 4/21**

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Lab	5	5%
Homework and Projects (6)	varies	45%
Quizzes (6)	20 each	25%
Final project	100	25%
Total		100%

Grading Policy

Grade	Range	
A	100 %	to 94.0%
A-	< 94.0 %	to 90.0%
B+	< 90.0 %	to 87.0%
B	< 87.0 %	to 84.0%
B-	< 84.0 %	to 80.0%
C+	< 80.0 %	to 77.0%
C	< 77.0 %	to 74.0%
C-	< 74.0 %	to 70.0%
D+	< 70.0 %	to 67.0%
D	< 67.0 %	to 64.0%
D-	< 64.0 %	to 60.0%
E	< 60.0 %	to 0.0%

More information on UF grading policy may be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation

period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/publicresults/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Conduct Code (<https://sccr.dso.ufl.edu/process/student-conductcode/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness U

Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 2731094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS) Student

Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu. <https://lss.at.ufl.edu/help.shtml>. Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources. Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-codestudent-conduct-code/>; <https://care.dso.ufl.edu>

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>