

Introduction to Computer-Aided Modeling

CAP 3220 Class # 11221

Credits: 3

Class Periods: MWF period 3 (9:35-10:25am)

Location: CSE E231

Academic Term: Fall 2024

Instructor:

Rong Zhang

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[352-294-6680](tel:352-294-6680)

Office Hours: MWF Period 4 (10:40am – 11:30am) @ MH5107 or by appointment

Peer Mentors:

- Chrys Woehler <cwoehler@ufl.edu>
- Vic Siver <vsiver@ufl.edu>

Course Description

Introduces topics related to computer-aided modeling. Polygonal mesh, NURBS and subdivision surface meshes. Materials and shading networks. Lighting, shadows and rendering. Credits: 3

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

- Create surface meshes of 3D objects
- Create and edit materials and textures to geometry
- Adjust lighting, cameras
- Animate camera motion and render images/videos
- Use Blender

Materials and Supply Fees

N/A

Required Software

- Software: Blender
Available in UF CIRCA labs
Students can download the software free from autodesk.com or www.blender.org

Recommended Materials

- Mastering Blender
 - Author: Tony Mullen
 - Publisher: Sybex; 2 edition
 - ISBN: 1118275403
- [Blender manual](#)

Required Computer

UF student computing requirement: <https://news.it.ufl.edu/education/student-computing-requirements-for-uf/>

Course Schedule

Week 1: Basic 3D concepts and 3D Primitives
Week 2: Polygonal modeling basics

- Week 3: Polygon topology, Modeling Details
- Week 4 and 5: Character Modeling
- Week 6: UV texturing mapping
- Week 7: NURBS Curve and Surface
- Week 8: NURBS Modeling and Texturing
- Week 9: Subdivision Surfaces and Modifiers
- Week 10: Shading and texture, lighting
- Week 11: Renderer, Ray Tracing
- Week 12: Bump and Displacement Mapping
- Week 13: Physics-Based Model and Simulation
- Week 14: Review and Final Project

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

Important Dates

- Sept 6 Project 1-1 Due (11:59pm)
- Sept 15 Project 1-2 Due (11:59pm)
- Sept 29 Project 2-1 Due (11:59pm)
- Oct 13 Project 1-3 Due (11:59pm)
- Oct 27 Project 1-4 Due (11:59pm)
- Nov 3 Project 2-2 Due (11:59pm)
- Nov 8 Final Project – I Due (11:59pm)
- Nov 17 Final Project – II Due (11:59pm)
- Nov 24 Final Project – III Due (11:59pm)
- Dec 3 Final Project Due (11:59pm)
- Dec 4 Final Project Demo (in class)

Attendance Policy, Class Expectations, and Make-Up Policy

You are expected to attend classes. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Pop quizzes must be taken in person during class time. There are no make-up quizzes. You'll earn full credit if you correctly answer at least 75% of the pop quizzes. Cell phones are permitted only during pop quizzes in class.

All assignments are due by the time listed on Canvas. Late assignments (both lab and project) will be accepted with a penalty of deduction of 10% of the maximum point value every 24 hours, for up to 3 days. Students are given **one** late pass, which grants no point deduction for 24 hours on any assignment (excluding the final project submission). Students who wish to utilize this late pass must fill out a form (link provided on Canvas) within three days of the assignment due date.

Academic Dishonesty will be dealt with strictly. Sharing / copying, “borrowing” of models from another student or online, in addition to other dishonest behaviors, are all considered academic dishonesty. If students create a model via following tutorials from other sources, they must cite those sources. Students cannot copy models from the Internet or other sources under any circumstances. Any student found to have violated these rules, whether a provider or receiver or unauthorized help, will be assigned a zero grade and referred to the Honor Court.

Grade reviews must be requested within one week of a grade being posted. After two weeks, no grade will be revisited.

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Labs (10, allow to drop 1)	1 each	15%
Projects (2, with 6 submissions)	20-40 each	40%

Pop Quizzes	1-3 each	5%
Final	100	40%
		100%

Grading Policy

Percent	Grade	Grade Points
94.0 - 100	A	4.00
90.0 - 93.9	A-	3.67
87.0 - 89.9	B+	3.33
84.0 - 86.9	B	3.00
80.0 - 83.9	B-	2.67
77.0 - 79.9	C+	2.33
74.0 - 76.9	C	2.00
70.0 - 73.9	C-	1.67
67.0 - 69.9	D+	1.33
64.0 - 66.9	D	1.00
61.0 - 63.9	D-	0.67
0 - 60.9	E	0.00

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.ua.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.ua.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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 Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. 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 varied perspectives and lived experiences within our community and is committed to supporting the University’s core values, including the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information, and veteran status.

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 Undergraduate Coordinator
- HWC OE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
- Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@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) 273-1094, 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 Learning-support@ufl.edu.
<https://elearning.ufl.edu/>.

Career Connections 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-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/getting-help/>; <https://distance.ufl.edu/state-authorization-status/#student-complaint>.