



THE OHIO STATE UNIVERSITY

SYLLABUS: ACCAD 7104

PROCEDURAL ANIMATION

AUTUMN, 2023

Course overview

Instructor

Instructor: Matthew Lewis

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Office hours: by appointment (Zoom or Sullivant Hall 339C)

Course description

The investigation of procedural methods for modeling and animating 3D computer graphics.

This course broadly investigates ways to analyze, design, and implement procedural approaches for modeling and animating 3D objects and environments, as well as their behaviors. Instead of sculpting, keyframing, and painting computer graphics assets, procedural techniques generally involve the construction of processes for generating design solutions.

Course learning outcomes

Students will gain experience identifying and understanding opportunities for creating efficient parametric representations of designs so that changing a handful of numeric values modifies their model or motion's creation process. Students will be exposed to current technologies that enable the creation of complex procedural relationships and generative systems without requiring extensive programming experience. They will gain an awareness of the relative computational expenses involved in managing complexity.

Course format

This course is intended to be a synchronous classroom learning experience.

Students will be introduced to an evolving set of procedural techniques and concepts through design exercises and labs. The course will survey recent advances in generative interfaces and representations. Students will be shown existing procedural work primarily from film effects, design, art, and architecture. Examples of varying levels of complexity will be presented to demonstrate different techniques. Students will be required to use the techniques and examples presented to design their own procedural systems. Previous experience with creating and presenting digital images, video, 3D animation, and web pages will be assumed. The assignments will be flexible enough to allow students from different disciplines to create projects appropriate for their disparate fields and goals (e.g., architecture, art, CS, design, etc.)

While images, video, software, and hardware will all be introduced, students will learn primarily by creating and experimenting with their own projects. Previous basic experience working with digital files, images, and video will be assumed. Students will be evaluated based on four projects during the semester and class participation. The assignments will require presentations and submission of research documentation and materials such as image, video, slide, and text files. Collaboration between students in the course will be encouraged and dependent on shared research topic interests.

Course materials

Required Supplemental Materials

Students are not required to purchase any specific textbooks, software, or hardware. Software required for the course is available for free download and provided in our lab. Documentation, tutorials, and examples are provided with software installation or are available for download. Links to blogs, web sites, etc. are updated through the semester via Carmen.

Communication Tools

Optional video conferencing with your instructor requires the use of a video call using Zoom. Therefore, it is required that you install the Zoom application. Be sure to log in with the SSO (osu.zoom.us). You will also need a microphone for voice connection. Video connection is optional, but highly recommended to ensure optimized communication.

Scanning and Documentation Tools

You are not required to print anything for this course. All of your work will be uploaded as a digital file. In some cases, images may be included in your work, and you will be required to insert them into documents. I will be happy to guide you through this process (as well as file size management) if you require help.

Optional Materials

N/A

Course technology

For help with your password, university e-mail, Canvas, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** <http://ocio.osu.edu/selfservice>
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

Grading and faculty response

Grades

Assignment or category	Points
1. Parametric design: construct a geometric, hierarchical structure with parametric controls that adjust its form, using the techniques discussed in class.	22
2. Particle Systems: Create an animation showing behaviors that demonstrate several of the procedural animation techniques presented in class.	22
3. Simulation effects: Create a short animation showing a combination of different dynamics systems.	22
4. Final project: Students choose to extend a previous projects or investigate a new procedural topic.	22
Class participation	12

See course schedule, below, for due dates.

Full project descriptions/details are provided on the Carmen class assignment pages.

Late assignments

Finished work received after the due date and time of an assignment will be accepted, but you must speak with your instructor to negotiate a modified deadline in order for late work to receive credit. Communication requesting a modified deadline must take place within 24 hours of the original deadline. Any work received after the modified deadline will not receive credit.

10% per day will be subtracted from late assignments.

Grading scale and translation of marks

- 93–100%: A Work is exceptional quality; ideas are articulated in specific, vivid and thorough ways
- 90–92.9%: A- Work is very high quality; ideas are well considered and explained clearly
- 87–89.9%: B+ Work is high quality, reflecting higher than average ability
- 83–86.9%: B Work is very good and satisfies the goals of the assignment
- 80–82.9%: B- Work is slightly above average and goes slightly beyond basic expectations
- 77–79.9%: C+ Work is average, reflecting an understanding of course material and demonstrating an effort to apply it
- 73–76.9%: C Work is passable but only adequate in its ability to meet basic expectations
- 70–72.9%: C- Work is below good academic performance standards; underdeveloped or containing inaccuracies
- 67–69.9%: D+ Work is below average; demonstrates minimal effort
- 60–66.9%: D Work is well below average; incomplete or inaccurate
- Below 60%: E Work receives no credit; unsuccessful completion, objectives of the assignment are not met at all or are met in a significantly limited way

Faculty feedback and response time

I am here to help and I encourage you to communicate with me. The following list should give you an idea of my intended availability throughout the course and to encourage proactive communication. (Remember that you can call **614-688-HELP** at any time if you have a technical computer-related problem.)

Grading and feedback

For assignments, you can generally expect feedback within **7-10 days**.

E-mail

I will make every effort to reply to e-mails within **24 hours on weekdays**. Please note that e-mail sent between 5 pm and 8 am are not likely to be answered until the following day.

Carmen

Email through Carmen's inbox function or through your BuckeyeMail will be the only source of private and secure conversations. General information, personal matters, assignment or class-related inquiries or other similar topics should be addressed using these two sources. All university correspondence is sent to your BuckeyeMail email address, and all email sent to faculty and staff should be sent from your BuckeyeMail email address.

Ohio State will never ask you for your Ohio State username or password. Do not reply to any email asking for your Ohio State username, password, or other personal information. Report such messages to report-phish@osu.edu.

Zoom

The Zoom video call application is used for virtual class meetings. I understand that some students may have technical issues or poor internet connections. I will keep this in mind when interacting with you on Zoom. You can contact ODEE or visit the Zoom Resource Center for technical difficulties that are related to the application itself.

<https://resourcecenter.odee.osu.edu/carmenzoom>

There are protocols for professional use of Zoom that you should always keep in mind. You are expected to maintain professional behavior and appearance while in an active Zoom meeting. Using how you might look and behave in a face-to-face engagement/physical class meeting provides a good guideline to follow.

My office hours will be conducted either in my office or using the Zoom app. Please contact me for an appointment time.

Attendance and participation

Student participation requirements

This is a synchronous course, meaning that you will be expected to attend the course on the scheduled days at the scheduled times. In between class meetings, please review and study your instructor's announcements and posted presentations, as well as a variety of readings, videos, web sites, etc.

To complete the course successfully students should expect to participate in discussions online and in class. This course requires significant initiative from students, allowing for personal design interests and goals to be integrated into projects. With the freedom to guide one's own learning comes substantial obligation to design projects and processes.

The class participation grade will take into consideration student contributions during topic discussions and critiques, engaged questions and responses during class time or office hours, and via email and Carmen.

Attendance policy:

Attendance, productive class activity and meeting in-progress deadlines are factors in the assessment of your assignments. Students are expected to be present and active for the entire synchronous class period. Attendance may be taken at any point in the course meeting therefore, you may be counted as absent if you are not present when attendance is taken. Three late entries / early departures = one absence. Tardiness,

missing class, and poor preparation can, therefore, impact your project/course grades in a detrimental manner.

Illness, family obligations, and other conflicts with your classes do occur from time to time and up to three absences are allowed for any reason during the semester without penalty. In the instance that you miss three class meetings, you are required to meet with your instructor to discuss strategies for avoiding additional absences. Missing class more than 20% of the semester (six class meetings for a course that meets twice a week or three class meetings for courses that meet once per week) may result in an E grade for the course.

Communication guidelines

The following are our expectations for how all of us should communicate as a class: in classroom discussions; in written communication; and in what you write as part of assignments and examinations. Above all, please remember to be respectful and thoughtful.

- **Writing style:** Any written submissions should follow the standard English guidelines for using proper grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility:** In verbal exchanges and in writing, let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources:** In any form of academic submission, please cite your sources to back up what you say. (When using course materials that originally took a printed form, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work:** Consider composing anything you submit for this course using a word processor where you can save your work, and then copying into the Carmen drop box for submission.

Other course policies

Academic integrity is essential

Policies for this course

- **Learning module quizzes (LMQ)** There will be no quizzes.
- **Assignments:** Your assignments should be your own original work. When referencing the works of others in formal assignments (both text and images), you should follow the **MLA citation style** to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn

them in--but no one else should revise or rewrite your work. If you have questions about formatting, consult with me.

- **Reusing past work:** In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me first.
- **Falsifying research or results:** Any research you conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review:** The graded projects in this studio are typically completed individually. There are no exams. There is a brief weekly individual writing assignment. If you're unsure about a particular situation, please feel free to ask the instructor.

Ohio State's academic integrity policy

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report our suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact your instructor.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages ([COAM Home](#))

- *Ten Suggestions for Preserving Academic Integrity* ([Ten Suggestions](#))
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Accessibility accommodations for students with disabilities

Requesting accommodations

This course is designed with flexibility and accessibility in mind. Still, any student who feels they may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. *Students should provide official documentation (provided through the office of Student Life Disability Services) regarding conditions that may require accommodations in the studio/classroom or that may impact their performance in this course within the first week of class.*

Please contact:

Student Life Disability Services
098 Baker Hall
113 W. 12th Ave
Columbus, OH 43210

Go to <http://ods.osu.edu> for more information.

Accessibility of course technology

This course requires use of Canvas (also known as *Carmen*: Ohio State's learning management system) and other on-line communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- [Canvas accessibility](#)
- Streaming audio and video

The Value of Diversity

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender identity and expression, and nationalities. Class rosters are provided to the instructor and may include the student's legal name unless changed via the University Name Change policy. I will gladly honor your request to address you by another name or gender pronoun. Please advise me of this early in the semester so that I may make appropriate changes to my records.

Caring for your Mental Health

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling [614-292-5766](tel:614-292-5766). CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on call counselor when CCS is closed at [614-292-5766](tel:614-292-5766) and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

Sexual Misconduct/Relationship Violence

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu.

Course Schedule

Tentative weekly schedule: topics and dates may vary based on student background and interests, emerging technology capabilities, and resource availability and scheduling.

WEEK	MODULE	TOPIC	DUE DATES/DEADLINES
1	1	Introductions, overview, goals;	
2	2	Copies and assets	
3	3	Animation functions Animation control	
4	4	Working Project 1 presentations	Presentation due
5	5	Project 2 introduction Particle systems	
6	6	Behavioral animation Animation variation	
7	7	Data, input, sound Working	
8	8	Project 2 presentations AU break, no class	Presentation due
9	9	Project 3 intro, Rigid bodies, and constraints Solids, fractures, wires, and cloth	
10	10	Smoke and fluids Fire	
11	11	Additional dynamics topics Working	
12	12	Project 3 presentations Project 4 introduction	Presentation due
13	13	Procedural shading Procedural compositing	
14	14	Emerging topics Thanksgiving break, no class	
15	15	Working	
16	16	Project 4 presentations	Presentation due