CEE 4560 - Origami Engineering
Fall 2026, Section A, 3 credits

Instructor

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Office Hours: By appointment. Questions can be asked on MS Teams Chat with no appointment.

Course Description

This class acquaints the student with state-of-art concepts in origami engineering and teaches the algorithms necessary to design and analyze origami structures for innovative applications. Through the art of origami, students will be introduced to the basic concepts of the design process, and will learn to approach innovation from a human-centered perspective. Combining design and engineering, students will develop origami products by adopting the process of re-framing problems in human-centric ways, creating ideas through brainstorming, prototyping, and testing.

Part of the Global Engineering Leadership Minor, this course capitalizes on the design thinking approaches taught and links them to the leadership skills of team formation, empathy, team creativity, giving and receiving feedback, leading through conflict, and reflection.

Course Outcomes

During this course, the student will learn by actively participating in lectures and demonstrations, by solving individual homework assignments, and completing a semester-long project as a member of a small team. After the student completes the course they will be able to:

- Identify, analyze, and create origami patterns and structures.
- Mathematically determine key features of origami patterns including developability and flat-foldability.
- Understand the basic mechanics of origami structures.
- Utilize the design process to understand human-centered problems and develop innovative origami solutions.
- Apply aspects of design to individual and team awareness.

Prerequisites

This course is intended for all levels of undergraduate students who have taken Math 1552 and Math 1553.

Website

The website for the course is https://canvas.gatech.edu. Students are expected to check regularly for announcements and are responsible for the material posted. Emails will be sent via Canvas to the email on record. It is the student's responsibility to check their email regularly.

Grading

The final grade will be determined from the following grading scheme:

- Origami Engineering Portfolio (30%)
- Design Portfolio (40%)
- Exam (20%)
- Participation (10%)

Portfolio Projects

This class will focus, primarily, on the process, rather than the end product. It will include the process of learning origami engineering and the design process to develop a product. The portfolio is a tool frequently used in the design field to emphasize process, not just content. As such, students will create two semester-long portfolios focused on each aspect of the course: origami engineering and design. The origami engineering portfolio will be an individual effort and the design portfolio will be a group effort.

Exam

One exam will be given during class. You will be allowed a single 8.5x11 paper (both sides) for notes during the exam and a calculator. Cheating off of another student's exam is unethical and unacceptable. Other examples of cheating include, but are not limited to, using unauthorized material to exam, collaborating or sharing notes, talking during exam and using cellphones.

Participation and Attendance

Attendance and punctuality are basic requirements for an effective discussion and a team-based course. Therefore, each student's frequency and quality of contribution to the class discussion will be assessed and reflected in the class participation score. If you cannot attend a class, it is a courtesy to inform your group and your professor in advance, if possible. Participation counts for a percentage of the final grade. It includes but is not limited to in-class activities, in-class participation, and in-class attendance.

Academic Integrity

The Georgia Tech Honor Code is the standard of conduct for this course. The Honor Code is available at http://www.honor.gatech.edu/. You are allowed to work in groups on all homework, but any work you turn in must be written in your own hand and cannot be a direct copy of any other student's work, online solution manuals, or AI. Exams are to be your own work.

Cheating off of another student's exam is unethical and unacceptable. Cheating is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly per Georgia Tech policy. Other examples of cheating include, but are not limited to, bringing unauthorized material to exam, collaborating or sharing notes, talking during exam and using cellphones. Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Attendance

In the event of a medical emergency or an illness that is severe enough to require medical attention, students are responsible for contacting the Office of the Dean of Students as soon as possible to

report the medical issue or emergency, providing dated documentation from a medical professional and requesting assistance in notifying their instructors. The medical documentation will be handled confidentially within the Dean of Students Office and will inform a decision as to whether communication with instructional faculty is appropriate. It is the expectation of the Institute that instructional faculty will honor a request from the Office of the Dean of Students to excuse a medical emergency or illness and allow make up of the work missed, including homeworks, quizzes, presentations, examinations, or other class assignments. All other Georgia Tech approved absences will be honored per the appropriate policy.

Accommodations for Students with Disabilities

The Georgia Institute of Technology has policies regarding disability accommodation, which are administered through The Office of Disability Services. http://disabilityservices.gatech.edu/. For students with disabilities, please contact this Office to request classroom accommodations. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.