PROFESSOR	Dr. Rebekah B. Johnson Yates · OFFICE: Library 131 EMAIL: rebekah.yates@houghton.edu OFFICE HOURS: To be announced after student survey In person is the best way to contact me. Email is the next best way.
WEBPAGE	https://facultysites.houghton.edu/rebekahyates/Origami.html If you miss class, it is your responsibility to determine what you have missed by checking the webpage and asking another student in the class.
LOCATION/TIME	MWF 10–11:05 AM in Library 140
MATERIALS	origami paper

DESCRIPTION AND COURSE GOALS

This course is a survey of several areas of mathematics related to origami. We will explore both how origami can be used to solve certain problems and illustrate some ideas in mathematics as well as how mathematics can be used to describe some origami concepts. In this course, students will

1. explore the interaction between mathematics and origami by solving problems and proving results.

2. research a particular topic in or application of origami and mathematics and present that to the class.

3. grow in their ability to communicate about mathematics both orally and in writing.

CLASS TIME & ATTENDANCE

The best way to learn mathematics is to do mathematics. To this end, class time will be very interactive; you need to be prepared to discuss the material each day. We will spend most of class time working through in groups on various activities relating origami and mathematics and learning relevant mathematics through discussion and problem solving.

Please let me know (in writing or in person) if and why you will be missing a class. Since class time involves your active participation, missing class will adversely affect your grade.

TECHNOLOGY IN THE CLASSROOM

With the possible exception of a few instances, we will be practicing an electronic-device-free classroom in order to engage deeply with the material and each other. Please turn off your cell phones and stow them in your bag upon entering the classroom and leave them there for the duration of the class. Even better (according to research, not just me!), don't bring them into the classroom at all.

DAILY WORK

After (almost) each class day, you will have a two-part assignment posted on the course webpage for the next class meeting.

Class Prep. This part will consist of some of the following; readings, videos, questions, problems, and objects to fold. Please complete these assignments before coming to class so that you are prepared to engage well in our activities and discussions in class.

Problems. These problems will be assigned after we've discussed the relevant material in class. They will generally be due on Fridays, and you will turn in all problems assigned from the previous Wednesday, Friday, and Monday (so that you have at least four days to work on any new problem). Work on these on your own and then consult with me and other class members as needed. After your consultations, write up your final solutions completely by yourself in your own words without comparing them with other people's solutions and include a note crediting any collaborators with each problem on which you collaborated. Note: while you are welcome to use textbooks as resources (but not to copy solutions from them), looking at solutions on the internet or using AI to solve your problems is not an acceptable method to complete a homework or exam problem. Your solutions must be clear and neat (this is an important part of communicating your results to others), and you will be required to type some problems using LaTeX.

CELEBRATIONS OF LEARNING

We will have a short Celebration of Learning (a. k. a. quiz) every Friday except the last Friday.

PROJECTS

You and a partner will complete a project which will involve a class presentation and a paper. You will present your project during one of our last two class periods (Wednesday, February 21 and Friday, February 23). More details on the project can be found on the last page of the syllabus.

GRADING

Your grade will be based on homework (problems), in-class work/participation, Celebrations of Learning, and the project. As a general guideline, homework will be worth around 40% of your grade, in-class work 15%, short Celebrations of Learning 20%, and the project 25%. I reserve the right to change the percentage distribution.

ACADEMIC INFORMATION

Academic Honesty: Honesty is the foundation on which all intellectual endeavors rest. To use the ideas of others without acknowledging the authors of those ideas belies the nature and purpose of academic life. At Houghton, where we strive to live out Christian calling and commitment, personal integrity, including academic honesty, should be the hallmark of all our work and relationships. Students are expected to exhibit extreme care relative to personal honesty in all academic work, including in-class and out-of-class learning experiences, such as exams, quizzes, journals, papers and research projects. Please refer to the catalog for the details of this policy.

Guidance and Probation: Houghton guidelines can be found in the Houghton catalog.

ACCOMMODATIONS

If you have an academic or physical disability that requires special accommodations or modifications, it is up to you to self-report any such disability to the office of Academic Support and Accessibility Services in the Center for Student Success located on the first floor of the Chamberlain Center and reachable by phone at 585–567–9622. With appropriate documentation, you will be afforded the necessary accommodations and/or modifications. For more information about Academic Support and Accessibility Services, go to `https://www.houghton.edu/undergraduate/student-life/student-success/academic-support-and-accessibility/`. Please let me know how I can assist you as well.

TEA TIME

Every Monday at 4 PM, the math faculty and any students who want to come will gather in the ϵ Neighborhood outside the faculty offices for hot beverages, goodies, a fun math problem, and conversation (both mathematical and non-mathematical). Please join us! Note: Tea Time is not intended for homework help.

TIME COMMITMENT

In accordance with the guidelines of 2–3 hours of work for each credit hour for a course, the well-prepared student should spend approximately 8–12 hours of work per week beyond the time spent in class. If you find that you are spending significantly more time than this, please let me know so that I can help you be more efficient or adjust the workload. If you are spending less time than this, you may not be investing enough time to learn well.
A typical week will include the following:

- class (65 minutes × 3 classes = 195 minutes)
- Class Prep (3 hours/week = 180 minutes)
- Problems (4 hours/week = 180 minutes)
- going over notes (3 classes x 15 min/class = 45 minutes)
- discussing problems and going to office hours (1 hour = 60 minutes)
- working on project (1.5 hours = 90 minutes)

TOTAL: 810 minutes or 13 hours and 30 minutes per week (3 hours and 15 minutes of class and 10 hours and 15 minutes outside of class) × 7 weeks = 5670 minutes or 94.5 hours for the semester.

DEPARTMENT GOALS & HOUGHTON ESSENTIAL LEARNING OUTCOMES

Course Goals 1 and 2 support the Mathematics Department Content Knowledge goal. Course Goals 2 and 3 support the Mathematics Department Effective Thinking and Communication; Independence, Collaboration, and Persistence; and Liberal Arts goals. This course fulfills the General Education Abstract and Quantitative Reasoning core course requirement and contributes to students' progress on Houghton's Essential Learning Outcomes 2: Practice scholarship informed by a Christian view of the world with integrity and respect for all; 4: Demonstrate intellectual and practical skills including critical reasoning, effective and creative communication, and quantitative thinking through application to progressively more challenging problems and projects; and 6: Practice ethical decision-making, creative problem-solving, and teamwork for service and leadership in the home, workplace, church, and community.

Project Guidelines

You have three (not necessarily mutually exclusive) options for your project.

Option 1: Origami and Math Activity

You will create/find an activity that explores some relationship between origami and (college-level) math that we do not cover in class and lead the class through it, making sure that the activity includes both origami and mathematics. In addition to preparing your presentation, you will write a (2+ pages) reflection paper on what you learned in preparing the presentation and about how the presentation went.

Option 2: Application

You will find an application of origami in the "real" world, work to understand the mathematics related to that application, present that application to the class, and write a short (2+ pages) reflection paper on what you learned in preparing the presentation and about how the presentation went.

Option 3: Article

You will read, summarize (as in, write a summary to turn in), and present the results of a research paper on origami and mathematics.

Requirements

Whichever option you choose, you will present your findings to the class during the last week of class. Your presentation should be 20–25 minutes long, equally shared between the group members, as interactive as possible, and include visuals (unless these are origami pieces being created by you and/or your classmates as an instructive part of the presentation, these visuals should be prepared beforehand and not created during the presentation for the sake of time).

Dates

- Friday, January 12: submit your partner survey (handed out in class) and top three ideas for your project with your reason(s) for being interested in each.

- Friday, February 2: submit Progress Report #1 on your project. Include what you've done so far, what your plans are as you continue, a list of sources, and a draft of anything you have already completed.

- Monday, February 12: submit Progress Report #2 on your project. Include what you've done so far, what your plans are as you continue, a list of sources, and a draft of anything you have already completed. **Sign up for presentation date.**

- Wednesday, February 21, or Friday, February 23 during class: present your activity/application/paper.

- Friday, February 23 by 11 PM: submit your summary/reflection paper.