

# Math for Architecture

MATH 1118

## Instructor Info

Claire Merriman

Office Hours: Mon 3 pm, Thurs 2 pm

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## Course Info

Prereq: A grade of C- or above in 1148 or 1150, or credit for 148 or 150, or Math Placement Level M or L; and enrollment in School of Architecture.

Mon, Wed, Fri 12:40p-1:35p

Arps Hall 012

## Grading

Participation	10%
Reflection Assignments	10%
Quizzes	10%
Homework	60%
Project	10%

## Grading scale

A	93-100	A-	90-92		
B+	87-89	B	83-86	B-	80-82
C+	77-79	C	73-76	C-	70-72
D+	67-69	D	60-66		
E	0-59				

Rounding grades near the cutoff scores will be based on semester long attendance and utilization of the resubmission process. It will not be based on individual requests.

## Project Due Dates

Project Plan Due	November 12
Project Draft Due	November 22
Final Project Due	December 16

## Overview

The intent of the course is to introduce these students to the mathematics inherent in 2D and 3D design. Moreover, there is an emphasis on similar figures and the issues that arise when scaling lengths, areas, and volumes.

The main goals of the course are to:

- determine a reasonable estimate before performing a calculation,
- explain the relationship between scaling lengths and scaling areas and volumes,
- learn and apply basic geometric formulas,
- explain why presented concepts and formulas are true,
- determine if a shape can be used as a tile for tessellations,
- use trigonometry to solve common problems,
- use mathematical language to describe symmetries

The goals of this course format and homework grading are to:

- take a solution to a problem in a given context, and applying that same solution to another problem,
- increase student confidence in their ability to solve difficult math problems by using previous results, trying different methods, asking questions, and working with others
- increase student confidence in their ability to judge when a solution is "done."
- improve student's mathematical communication skills

Assignments and grades will be posted on Carmen.

This course is likely different from how you have been taught mathematics in the past. You are learning new skills, which can be difficult.

However, the goal is to give you many opportunities to meet these expectations. You are not expected to already know how to solve these problems before the start of the semester.

If you are sick or otherwise have to miss class, contact me as soon as possible about making up missed work and turning in assignments.

## Material

There is no textbook for this class, all of the necessary files are available on the course website at <https://carmen.osu.edu>. These files will serve as an outline for your course notes, as well as containing the homework questions. The answers to these questions will become your Geometry Journal.

Some assignments will use Snap (<https://snap.berkeley.edu/>). This is easiest on a tablet with a physical keyboard or computer. For more technical requirements, see <https://snap.berkeley.edu/requirements>.

Some activities will use graph paper, straightedges, rulers, or protractors. You may use digital versions of these materials.

## Expectations of Behavior

Remember that everyone comes to the class with different mathematical and personal backgrounds. If someone has seen some of the course material before, that does not mean everyone has seen it before or that I expect you to already know it.

I expect this course to be a place where you will be treated with respect. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. No student should be marginalized in any form for questions or contributions made in class, during office hours, or on Carmen discussion boards. Students should cooperate to help each other's understanding of the mathematical concepts discussed in lecture regardless of their background. Creating or contributing to a hostile environment during class or through the discussion boards/email will result in lost participation points.

Discrimination against any individual based on age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status will not be tolerated.

## Participation

This class will involve more in-class participation than you might be used to in a math class. Each class you will be assigned a group to work with. There will be problems throughout each class for the groups to solve or discuss. Participation will mostly be based on working on these group problems during class. In addition to sharing these solutions in class, you will write up the solutions as your homework assignments.

There will be two main types of problems: *Think-Group-Share* problems will ask you to think about a problem, discuss your answer with the group, and then share your reasoning with the class. These problems will typically be short, true/false, multiple choice, or fill-in-the-blank type questions at the beginning of a unit.

The other problems will be *Free Response* questions. These will be closer to traditional homework-style questions, with an emphasis on explaining your reasoning.

Participation will be marked as follows:

- 0 pts** Absent, more than 10 minutes late, or leave more than 10 minutes early without an approved makeup plan. Or present without engaging with the mathematical content or group members.
- 1 pt** Arrives 5-10 minutes late or leaves 5-10 minutes early without an approved makeup plan. Or present with intermittent engagement with the mathematical content or group members.
- 2 pts** Present for the whole class while actively working on the course material with assigned group.

The instructor reserves the right to deduct additional points for distracting behavior or creating a hostile group environment.

If you are unable to attend on a certain day due to illness or other difficulties, we will work together to determine a plan for making up the work.

The lowest 3 scores will be dropped.

## Quizzes

There will be short quizzes approximately every other Friday. The schedule is on Carmen. Quizzes are open notes, but you may not discuss the solutions with other people during the quiz. Uploading questions or answers to any online service will be regarded as an attempt to discuss the material or share solutions. This includes the course's discussion boards for the duration of the quiz, in addition to messaging apps and homework 'help' sites.

If you have testing related SLDS accommodations, it is important that you let me know.

The quizzes will be at the beginning of class. They will be graded and returned on Gradescope, which is linked from the Carmen page.

## Reflection Assignments

These reflection assignments will be due on the Fridays that do not have quizzes, unless we do not have class (ie, October 15 and November 26). The schedule is on Carmen. These assignments are part of the "metacognition" process. The assignments will consist of open-ended questions for you to answer. They may ask about your thoughts about the course, explain a concept, etc. Your response must be several sentences long at least.

These assignments will be graded as on whether you engaged with the assignment. That is, did you give a reasonable attempt to answer the question that shows reflection on the material.

## Homework

Homework assignments consist of the *Think-Group-Share* and *Free Response* problems from class. The homework is due the next class period. Homework will be submitted and graded on Carmen.

*Think-Group-Share* problems will be graded out of two points, as *Missing*, *Incomplete*, or *Complete*.

All *Free Response* problems will be graded on accuracy of the mathematical argument and clarity of the explanation. These problems will be graded out of four points as *Missing*, *Does not demonstrate understanding*, *Needs Improvement*, *Progressing*, or *Demonstrates understanding*.

More detailed rubrics for each homework will be on the corresponding assignment page on Carmen.

Assignments should be legible—you should work out problems then write up a new, final version. Leave enough room for each problem and write them up in order. Problems or assignments that are messy may result in lower grades.

After the homework is graded, **you may revise your answers to the *Free Response* questions based on the feedback and resubmit for a new grade** due the class period after the homework is returned.

## Project

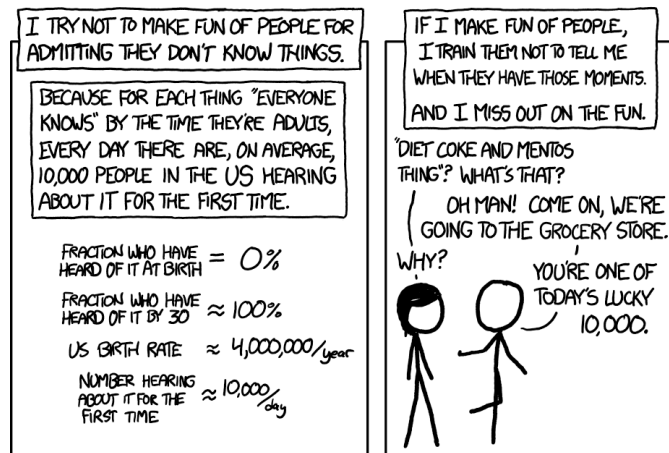
You will have a longer final project on a topic relating to two or three dimensional geometry. The topic and format of the project will be determined by each student and the instructor. While a paper-style final report or PowerPoint presentation are options, this is also an opportunity for students to choose how best to explore and explain the topic.

The first draft is due on November 22 and the final draft is due during the final exam period on December 16.

## Group Work

Much of your time in class will be spent working in groups. You are expected to be a helpful and active participant in all group work, as well as allowing the rest of your group to do the same. This means asking and answering questions, as well as working at the same pace as your group.

The topics in this course may be more or less familiar depending on what other courses you have taken. If you have already seen a concept that we cover in class, view this as an opportunity to learn about it from a different perspective and practice explaining complex concepts to others.



## How to Get Help

You are highly encouraged to attend office hours and post in the Carmen discussion boards. The office hours times will be set based on the Course Survey response.

Help for this course in particular:

- Office hours are a chance for you to ask questions and to get feedback on course assignments prior to submitting them. They are called office hours because they take place in my office instead of the classroom. In the event you are unable to attend office hours, you may request an appointment.
- Contact me via email or Carmen Inbox message.
- Carmen discussion boards allow you to ask questions outside of class and office hours, as well as get feedback from your classmates.
- You may work and study with your group or classmates outside of class, as long as you write your final submissions on your own. Carmen allows you to send messages to your classmates. You can also exchange contact information with each other.

I will respond to discussion board posts and emails within 24 hours on weekdays.

For general help with study skills, effective note taking, time management, etc. see the Dennis Learning Center (<https://dennislearningcenter.osu.edu/>). The Dennis Learning Center offers workshops and one-on-one academic coaching. **They are a part of OSU, so these services are free to all students.**

## Academic Integrity

Quizzes are open notes, but you may not discuss the solutions with other people during the quiz. Uploading questions or answers to any online service will be regarded as an attempt to discuss the material or share solutions. This includes the course's discussion boards for the duration of the quiz, in addition to messaging apps and homework 'help' sites.

Your homework and projects will be submitted individually. Though you may discuss your solutions with any of your classmates, **you are expected to write your final submissions on your own.** If you work on a problem with someone else (in or out of class) you should acknowledge this collaboration by making a statement of the form "For this problem, I collaborated with

...”. Any copying of work which is not your own is an academic integrity violation. In addition, allowing others to copy your work (in person or by making it available electronically) is an academic integrity violation.

If you use a source that is not our course notes or a linked resource on Carmen, you must cite them in the final write up. You do not need to use any specific format for your citations—just provide enough information that I can find the resource. You may not look up solutions to any problem assigned in the course on the internet. Once you have seen a full solution, it is not possible to independently develop a solution.

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <https://studentconduct.osu.edu/>.

## Make-up Policy

If you know ahead of time that you need to miss a class, let me know as soon as possible. The plan for making up work will depend on the assignment and the reason you missed class. Late assignments will be handled on a case-by-case basis.

You may make up participation points and Think-Group-Share homework problems for excused absences such as illness, family emergency, University sponsored travel, or religious holidays. If you are unsure about whether an absence is excused, talk to me. Some excused absences may require documentation.

Please stay home if you are sick, especially with cold/flu/covid symptoms. You will have a much easier time completing the classwork when you are recovered, and staying home will prevent you from getting others sick.

The following policies apply to short-term illnesses. Isolation or quarantine due to a positive covid test or contact tracing will be handled as longer term absences.

- You can use your own judgement about whether or not you should make a doctor’s appointment or contact Student Health Services. The Advice Nurses are at 614-292-4321. If the nurses or a doctor tells you not to go to class, do not come to class.
- For 1 or 2 missed classes, the plan will involve making up the Think-Group-Share discussions and completing the homework assignments before the next class period.
- If you have to miss 3 or more classes, we will discuss how best to handle making up work or excusing assignments.
- You are also encouraged to come to office hours or post in the discussion forums with questions. The deadline for the makeup material will depend on how many classes you miss.

If you are dealing with longer term illnesses or other life events that are interfering with your ability to attend class, reach out to me about how to handle assignments and attendance. These may require documentation.

## Accommodations for Students with Disabilities

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodations, I may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; <https://slds.osu.edu>; 098 Baker Hall, 113 W. 12th Avenue.

## Mental Health Statement

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 <https://ccs.osu.edu> or calling 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 and 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at <https://suicidepreventionlifeline.org>.