**MATH 2010Q: FUNDAMENTALS OF ALGEBRA AND GEOMETRY**
**Fall 2026 Course Syllabus**

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***Office Hours:*** *Weds 3-4PM, Thurs 3:30-4:30PM, and/or by appointment; email me.*
***Class meetings:*** *Tuesdays and Thursdays: 11:00-12:15PM/2:00-3:15PM* • MONT 227/MONT 111
***Textbook:*** Sybilla Beckmann, *Mathematics for Elementary Teachers with Activities*, 6th ed.
***Course Site:*** *HuskyCT for assignments, preparation, and all announcements*
***Materials:*** *Pencil • eraser • basic calculator • colored pencils • clear plastic ruler • 3-ring binder*

## COURSE PURPOSE

As a mathematics course, Math 2010, the primary goal is to improve, broaden, and deepen your facility with and understanding of school mathematics. In order for you, as a teacher, to help children develop persistence and flexibility, build on one another's ideas, and communicate and justify their findings, you too must become a confident problem solver with a deep understanding of school mathematics and the ability to communicate that understanding to others.
You should finish the semester with a solid understanding of the concepts we study, an understanding of why procedures work the way they do, and greater confidence in engaging with elementary school mathematics—confidence that you can eventually model for your students. My hope is also that, through the work of this course, you experience the satisfaction of moving from something that initially seems difficult or out of reach to genuine understanding, and leave more confident in your ability to learn mathematics that challenges you.

Numeracy—the ability to represent, communicate, and interpret quantitative information—is an important part of mathematical literacy and is emphasized in the Standards for Mathematical Practice. As a future teacher, you will be responsible for helping children develop these practices. Throughout this course, you will therefore strengthen your own spoken and written mathematical communication. You will present mathematical ideas and solutions in groups and to the whole class and write about mathematics using precise language and logical organization.

This course is primarily about mathematics. While we will consider different ways of approaching the material, the course is designed to strengthen your mathematical understanding in preparation for the elementary mathematics methods course, where your focus will shift more explicitly toward teaching mathematics.

## *LEARNING OBJECTIVES*

By the end of this course, students will be able to:

1. **Demonstrate conceptual understanding of foundational ideas underlying school mathematics,** including explaining why mathematical procedures and algorithms work.
2. **Reason about and solve mathematical problems** using multiple strategies and representations, and make connections among mathematical ideas.
3. **Evaluate and justify mathematical reasoning** by analyzing different approaches, making and supporting mathematical claims, and determining whether solutions and arguments make sense.
4. **Communicate mathematical thinking clearly**, orally and in writing, using precise mathematical language, representations, and logical organization.

## HOW THE COURSE WORKS

### *IN CLASS EXPECTATIONS*

This course is structured to give you the experience of developing your own mathematical ideas and becoming an increasingly independent learner of mathematics. In our classroom, I will take the role of facilitator: guiding the learning process, helping when you get stuck, and providing the larger mathematical context for what you are doing.

The important point is that you will be doing mathematics rather than simply listening to someone else do it. You will **work on tasks** designed to help you understand the ideas behind mathematical operations and procedures, encounter new ideas, and make connections among mathematical concepts.

You will often encounter an idea before you fully understand it. That is intentional. You will have opportunities to think about a problem independently, make a judgment or conjecture, and then compare your thinking with others. You may be asked to **explain why** you think something is true, question an idea that does not yet make sense to you, or revise your thinking after hearing another approach. Learning to recognize what makes an argument convincing—and what you need in order to become convinced—is part of learning mathematics.

We will often work in **randomly assigned groups** of two or three. Working with different classmates is an important part of the course. You will encounter different ways of reasoning about mathematical ideas and will have opportunities to practice explaining your thinking to people who may approach the mathematics differently from you. Sometimes your contribution will be a solution or explanation; at other times, a question, observation, connection, or carefully articulated confusion may be what moves the mathematics forward.

**Participation** is not simply being present or speaking frequently. Meaningful participation starts with thinking for yourself before relying on someone else's answer or approach. The goal is not to have the fastest answer. The goal is to become better at making sense of mathematics and at communicating that understanding to others. What does this look like? More on page 4.

**Electronic Devices:** A basic calculator is the only electronic device permitted during class unless otherwise approved by me and the University.

### *WHAT THE WEEK REQUIRES*

Plan to devote approximately **two hours outside class for every hour of classroom time**. This amount of time is a reasonable expectation for an average student. You are responsible for allocating that time according to your goals and needs and for seeking help in a timely manner. After each class meeting, HuskyCT will be updated with homework problems, preparation for upcoming class meetings, announcements, and supplementary materials.

Your work across the week should include:

> **Before class: Check HuskyCT** and complete the required work, including problems, readings, revision of relevant notes, and any other preparations for next class.
>
> **During class:** Think, work, discuss, explain, question, and take notes.
>
> **Between classes: Check HuskyCT** and complete assigned work, review what you learned, organize your notes, and follow up on questions or difficulties while there is still time to address them.

**REMEMBER:** The work outside class is not separate from the learning that happens in class. It is how you give yourself enough time to practice, investigate, recover mathematics you may have forgotten, and prepare to participate meaningfully in the next class meeting.

## *LEARNING OUTSIDE OF CLASS*

**HOMEWORK** problems will not generally be collected; however, you are expected to complete them before the next class meeting. This is an important part of the course. It gives you time to revisit ideas from class, work through problems on your own, discover what you understand and what you still need to work on, and prepare for the next class meeting. Homework is part of the process through which you learn what you know, what you do not yet know, and what you need to learn next.

**Getting Stuck is normal**. Part of becoming a stronger mathematics learner is becoming better at recognizing what is preventing you from moving forward**.** Before looking for a completed solution, try to identify the missing piece as specifically as you can (e.g., how to work with fractions, why a procedure works). Once you know what you need, use an appropriate resource (see below) to learn enough to move forward, and then return to the original problem. The goal is not to avoid getting stuck. The goal is to become better at learning your way through the places where your current understanding is not yet enough.

**Getting Help**. I urge you to seek help throughout the semester, not only when a big assessment is approaching. Use your **course materials**: notes, textbook, and supplementary materials as your first resource. Explaining your thinking to **classmates** and hearing another approach can deepen your understanding. **Study groups** are strongly encouraged. **Q-Center** has tutors who can help.

**Office hours**: Bring questions, unfinished work, points of confusion, etc. If you are falling behind or are concerned about your performance, please come see me ASAP. I can help identify study strategies, test-taking approaches, and other supports that may help. **There are no extra-credit assignments**.

**Other resources**: You may use other appropriate academic resources when they help you understand the mathematics and move forward. (See Academic Integrity policies, page 5)

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**ABSENCES**

Barring unforeseen medical or other serious circumstances, **I expect you to attend class on time for every meeting**. A substantial part of the learning in this course takes place during class through individual thinking, collaborative work, and discussion.

If you must miss class, let me know before class time whenever possible or as soon as possible afterward by email. Special accommodations for emergency situations should be arranged with me as soon as possible.

**You are responsible for:**

- contacting a classmate to find out what you missed;
- completing missed classwork;
- updating your notes;
- submitting any collected work **before the next class meeting**; and
- arriving prepared to participate when you return.

**Contact Person 1:** _____

**Contact Person 2:** _____

## *EVALUATION*

The descriptions below provide the general structure for evaluation in this course. Specific details may be adjusted according to the needs of the class and will be explained in class and/or posted on HuskyCT.

| Assessments for Grade Determination (dates are tentative) | | |
|---|---|---|
| Preparedness & Participation | Every class meeting | 10% |
| Quizzes | Approx. every other week | 20% |
| Exam 1 | Thursday, October 8 | 20% |
| Exam 2 | Thursday, November 19 | 20% |
| Final Exam (cumulative) | TBA by Registrar's Office | 30% |

**Preparedness & Participation.** A great deal of what I hope will happen for you in this course takes place during our class meetings as you think about mathematics, work with others, and participate in mathematical discussions. You will frequently be asked to develop and write your own ideas and solutions, explain your reasoning, consider others' approaches, ask questions, and revise your thinking as your understanding develops.

Meaningful participation is not measured by how often you speak or how quickly you arrive at a correct answer. A valuable contribution may be a sound mathematical judgment, a useful question, a connection to something you already know, an observation or conjecture, a carefully explained confusion, or an explanation that helps someone else understand an idea.

Participation will be informally assessed on a continuing basis in both small-group and whole-class settings using the **Class Participation Rubric** at the end of this syllabus. Familiarize yourself with the rubric and let me know if you have any questions or concerns. Expectations for participation will increase as the semester progresses.

**Quizzes.** In-class quizzes will be given regularly, approximately every other week, and will be announced about one week in advance on HuskyCT. Quizzes provide opportunities to assess your understanding of recently studied mathematics and to identify ideas that may need further attention before they become part of later work. **There will be no make-up quizzes**. Your lowest quiz grade will be dropped at the end of the semester; if you miss a quiz, that will be the quiz grade that is dropped.

**Exams & Final Exam.** Two in-class exams will be given during the semester. Each exam will cover all material that remains untested. The dates listed above are tentative. The final exam is cumulative and covers material from the entire semester. The date and time will be determined by the Registrar's Office. If you need to miss an exam, notify me as soon as possible so that necessary arrangements can be made. Appropriate documentation may be required. Make-up exams will be given within one week of the original exam and only under approved circumstances. Only a basic calculator is permitted on quizzes and exams. **No other electronic devices may be used unless specifically approved by me and the University in advance**.

**Submitted Work.** Your work on quizzes and exams should be neat, organized, and clearly presented in pencil, following the approaches and methods developed in this course. When explanations are requested, use complete sentences, logical reasoning, and precise mathematical language. Your explanation should communicate the reasoning behind your mathematical work rather than simply repeat the calculations or procedures shown.

## *FINAL GRADE DETERMINATION & UNIVERSITY POLICIES*

The purpose of this course, as is all education, is to learn—not just to "work for a grade." All students should be capable of earning an A in the course; however, merely completing the work does not constitute A work. Your final course grade reflects the quality of your work and the mathematical understanding you demonstrate across the course requirements.

The following grading below will be used.

| Grade | Percent | Grade | Percent | Grade | Percent |
|---|---|---|---|---|---|
| A | 93.5 - 100 | A - | 89.5 - 93.4 | B+ | 86.5 - 89.4 |
| B | 83.5 - 86.4 | B - | 79.5 - 83.4 | C+ | 76.5 - 79.4 |
| C | 73.5 - 76.4 | C- | 69.5 - 73.4 | D + | 66.5 - 69.4 |
| D | 63.5 - 66.4 | D- | 59.5 - 63.4 | F | Below 59.5 |

Final exam week for Fall 2026 takes place from Monday, December 14 through Sunday, December 20, 2026. **Students are required to be available for their exam during the stated time.** If you have any conflicts, you must contact the Dean of Students Office. Vacations, previously purchased tickets or reservations, social events, misreading the exam schedule, and oversleeping are not viable excuses for missing a final exam.

## *UNIVERSITY POLICIES*

This course follows the university policies regarding Academic, Scholarly, and Professional Integrity. For details, please visit: https://policy.uconn.edu/2023/07/11/academic-scholarly-and-professional-integrity-and-misconduct-aspim-policy-on/

It is especially important that you are familiar with university policy regarding **Academic Integrity**: All students shall act in accordance with the student code at the University of Connecticut, which states that: ``Academic misconduct is dishonest or unethical academic behavior that includes, but is not limited to, misrepresenting mastery in an academic area (e.g., cheating), failing to properly credit information, research, or ideas to their rightful originators or representing such information, research, or ideas as your own (e.g., plagiarism)." The full **student code** on academic integrity in undergraduate education and research can be found here: https://community.uconn.edu/the-student-code-appendix-a/

## TENTATIVE WEEKLY SCHEDULE

This schedule is only an outline to help orient you now. Actual topics and assignments will follow our work as it progresses and will be updated on HuskyCT. You should check HuskyCT for the actual semester schedule, daily outlines, and assignments for each class meeting.

| Week | Section and Topic | Homework |
|---|---|---|
| 1 | 1.1: The Counting Numbers<br>1.2: Decimals and Negative Numbers | 1.1<br>1.2 |
| 2 | **Quiz 1**<br>1.3: Reasoning to Compare in Base 10<br>Supplementary Section 1.6: Different Bases | 1.3<br>Ho |
| 3 | 2.1: Defining and Reasoning about Fractions<br>2.2: Reasoning about Equivalent Fractions<br>2.3: Reasoning to Compare Fractions | 2.2<br>2.3<br>2.4 |
| 4 | **Quiz 2**<br>2.4: Reasoning about Percent<br>3.1: Interpretations of Addition and Subtraction<br>3.2: Properties of Addition | 2.5<br>3.1<br>3.2 |
| 5 | 3.3: Why Standard Addition Algorithm Works<br>3.4: Reasoning about Addition and Subtraction of Fractions | 3.3<br>3.4<br>16. |
| 6 | **Quiz 3** & **Exam 1** (1.1-1.3, 2.1-2.4, 3.1-3.4) | |
| 7 | 4.1: Interpretations of Multiplication<br>4.2: Why Multiplying by 10 is Special<br>4.3: Commutative and Associative Properties of Multiplication | 4.1<br>4.2<br>4.3 |
| 8 | **Quiz 4**<br>4.4: The Distributive Property<br>4.5:Arithmetic Properties and Mental Math | 4.4<br>4.5 |
| 9 | 4.6: Why Standard Multiplication Algorithm Works<br>5.1:Making Sense of Fraction Multiplication | 4.6<br>5.1 |
| 10 | **Quiz 5**<br>6.1: Interpretations of Division<br>6.2: Fraction Division and Division with Remainder | 6.1<br>6.2 |
| 11 | 6.3: Why Standard Division Algorithm Works<br>6.4: Partitive Division with Fractions | 6.3<br>6.4 |
| 12 | **Quiz 6** & **Exam 2** (4.1-4.6, 5.1, 6.1-6.4) | |
| | *~THANKSGIVING BREAK~* | |
| 13 | 7.1: Ratio and Proportional Relationships<br>7.2: Proportional Reasoning with Multiplication and Division | 7.1<br>7.2 |
| 14 | **Quiz 7**<br>7.3: Unit Rates and Multipliers<br>7.4: Proportional Relationships | 7.3 |
| Cumulative Final Exam: Date: _____ Time:_____ Room:____ (TBA by Registrar's Office) | | |

HOMEWORK ASSIGNMENTS WILL BE POSTED AFTER EVERY CLASS ON HUSKYCT.
Check HuskyCT

## CLASS PARTICIPATION RUBRIC

Class participation will be assessed informally and continuously as you interact in both small-group and whole-class settings. The goal is to recognize **the quality of your engagement** with your own thinking and with the thinking of others.

| Grade | Expectations |
|---|---|
| A | **Contributing to Others' Learning**[1]<br>At this grade level you listen carefully to what others are saying, connect what you hear to your own thinking, and ask questions that help everyone move toward a better understanding of the mathematics at hand. You share your thinking and your work publicly in a way that others can follow and learn from. This includes inviting and responding to questions or suggestions, explaining your reasoning or confusion clearly, and being ready for class each day. The expectations for receiving this grade will increase as the semester goes on: you should work to develop these skills, since competence in them is required to earn the A-level grade by the end of the course. |
| B | **Contributing to One's Own Learning**<br>At this grade level you are clearly engaged in learning the mathematics but have not yet moved outside yourself to interact well with others. It generally means doing quality work and sharing your thinking with others, but making minimal efforts to understand others' questions or suggestions or to make sense of how they are thinking. In whole-class discussion, you are listening and learning, but you contribute minimally to the class's ideas, questions, or observations. |
| C | **Getting By**<br>This grade level involves coming to class, following directions for independent and small-group work, and completing your classwork. No noticeable efforts are made to deepen your own understanding, make sense of others' thinking, questions, or suggestions, or contribute your ideas, questions, or observations to the class. |
| D | **Minimally Engaged**<br>This grade level reflects inconsistent or minimal engagement in the mathematical work of the class. You may need prompting to begin or remain engaged in independent or group work, contribute little to the mathematical work, or complete class activities only partially. Although your participation does not interfere with others' learning, it provides limited evidence that you are actively engaged. |
| F | **Not Participating Meaningfully**<br>This grade level reflects an absence of meaningful participation or participation that is detrimental to your own or others' learning. Examples include being absent from class; being present but not engaging in the mathematical work; distracting group members or being belligerent about participating in the work; interrupting someone who is sharing their thinking, thereby undercutting their opportunity to think carefully about a problem; or suggesting that someone's difficulty or lack of a quick solution reflects a lack of ability. |

[1] This does NOT mean telling or showing someone else how to do something.

**REMEMBER**: **Whenever you are absent**, it is your responsibility to make up the work before the next class so that you are able to participate fully when you come back. See responsibilities associated with missing class on page 3.