
MA 111 – Intro to Contemporary Math

Sections 016, 017, Fall 2022

Hello! Welcome to MA 111. I'm glad you're here. This syllabus contains many important details and policies about our course, so please read it carefully. If you have any questions about the course (now or in the future), don't hesitate to ask me. I am here to help you succeed, and I will do what I can to support you. Let's start with the basics.

Instructor information

I am your instructor, Ms. Katie Bruegge. You may call me "Katie," or "Ms. Bruegge," whichever is more comfortable for you.

Email: kaitlin.bruegge@uky.edu. You can email me at any time with any questions, suggestions, or concerns. I do my best to respond to emails within one work day.

Office: Room 702 of Patterson Office Tower. Note that my office is *not* in our classroom.

Office hours: When you have questions or need help with anything, you are welcome to stop by my office without an appointment on

- Tuesday 11:30 AM - 1 PM,
- Thursday 3-4 PM.

These times are called my *office hours*, and I've set them aside specifically for you to drop in. I also hold a weekly office hour on Monday 10-11 AM in the Mathskeller (<https://math.as.uky.edu/mathskeller>) located in the basement of Whitehall. If none of these times work for you, you can email me and ask to set up an appointment for an in-person or Zoom meeting. You can also call my office phone at (859) 257-6804, though email is my preferred method of communication.

Meeting information and expectations

I currently teach two sections of this course:

- Section 016 meets T/Th, 9:30-10:45 AM, in Whitehall room 212 **and** W, 10-10:50 AM, in Whitehall room 335
- Section 017 meets T/Th, 9:30-10:45 AM, in Whitehall room 212 **and** W, 9-9:50 AM, in Whitehall room 339.

You are expected to attend all class meetings for your section and to participate actively. When you come to class each day, you should bring a notebook (either paper or on a tablet) for taking notes and a tablet/laptop for completing online activities. (Please let me know if you don't have access to this kind of device.)

We will do group activities every day in class, because we learn best by *doing*, not just *watching*. During group work, you should contribute substantially to your group, and encourage your group

members to do the same. Working individually is not an option. Getting to know a few of your classmates will help you learn better (and enjoy class more) long term.

To succeed in this class, you are expected to work on class material several times a week, outside of class time. You should spend that time reviewing class notes and lessons, completing homework assignments, and studying for assessments. The most successful students form a study group with whom to work and receive help, and they work on class material consistently throughout the week, not just cramming as due dates approach.

Course description and Learning Outcomes

This course is an introduction to concepts and applications of mathematics. We will practice solving problems related to numbers and interpreting our answers in a variety of contexts. The course is divided into four units: Voting Theory, Probability, Fair Division, and Graph Theory.

Within each unit, you will analyze solutions to real-world problems, learning how to optimize solutions to fit various ideals. You will be confronted with and learn to recognize many scenarios where either no solution is perfect, or a solution optimized for one goal will fail to meet another. We will see how mathematics is used in application, emphasizing analysis over equation-solving.

You will learn how to mathematically quantify ideas such as fairness, equitability, and optimality within these four areas of modern mathematics. Specifically, you will

- Apply various voting methods to ranked ballot data, and evaluate the fairness of the results.
- Compute and interpret probabilities from tabular data sets and medical diagnostic situations.
- Analyze solutions of division-of-goods problems for equitability. Apply standard procedures to resolve such problems, and identify their shortcomings.
- Utilize mathematical graphs as data structures. Apply standard graph theorems to understand the properties of these structures.

An overarching goal of this course is for you to learn to communicate technical results effectively. This task is impossible in an isolated setting, so you will work in groups each day in class. Communicating your understanding of a problem or solution to students of widely differing backgrounds will be a valuable resource in assessing and strengthening your understanding of the material, as well as your personal communication skills.

You will be assessed on your understanding of the concepts, execution of the techniques, and ability to interpret the meaning of numerical results coming from your analysis. I reserve the right to alter this syllabus or the course structure throughout the semester when necessary, and I will announce any changes promptly.

Inclusivity and Disability Help

Every student deserves to learn and participate in a classroom that is respectful and supportive. I commit to fostering such an environment for students of all genders, sexualities, disabilities, ages, socioeconomic statuses, ethnicities, races, cultures, and family situations. Likewise, I expect each of you in this class to act with respect and support toward each other. If at any point you feel unwelcome or uncomfortable in this class, please reach out to me immediately so I can change what I

am doing or can intercede with a classmate on your behalf. You can read UK's policy on inclusivity here: <https://www.uky.edu/universitysenate/syllabus-dei>

I aim to make this class accessible to students of all abilities and backgrounds. If you have trouble accessing, viewing, hearing, or responding to any of our class resources, please tell me so I can help you with them. You may seek disability support and documentation from UK's Disability Resource Center: <https://www.uky.edu/DisabilityResourceCenter/>. If you require classroom or testing accommodations (e.g. a scribe, extended time on exams, etc.), please send me your DRC accommodation letter at least one week ahead of the first assignment you need it for.

Required materials and technology

Our class has no required textbook. If you'd like an additional resource, here is a free online textbook you can reference: <https://www.opentextbookstore.com/mathinsociety/>. It contains both written material and videos.

We will use Canvas daily to share course materials and announcements and to complete assignments, so it is important that you have access to our Canvas page and have email notifications turned on.

Our online homework system is called WeBWorK. It is free to use, and an account has already been set up for you. To access WeBWorK, you *must* use the link provided on our Canvas page. If you are inactive on WeBWorK for too long, you will be logged out and will need to log back in through Canvas.

Grading

Participation is worth 15% of your grade. You will earn participation points by attending class every day and completing the daily activity.

Homework is worth 30% of your grade. Many of your homework assignments will be completed online via WeBWorK, but there will be other assignments that you turn in on Canvas or in person. You are encouraged to work with your classmates on homework assignments, unless explicitly told not to.

Quizzes are worth 40% of your grade. We will have three quizzes for each unit of the class, so twelve quizzes total. I will ignore your lowest two quiz scores, so your ten highest will each be worth 4% of your grade.

Projects are worth 15% of your grade. We will have one project for each unit, so four projects total. I will ignore your lowest project score, so your three highest will each be worth 5% of your grade.

Your overall letter grade in the class will be based on the following standard breakdown:

percentage	letter grade
above 89.50	A
79.50 – 89.49	B
69.50 – 79.49	C
59.50 – 69.49	D
below 59.49	E

Completing course assignments is a key component to learning class material. I want you to have the chance to learn by completing all our class assignments. If you miss a participation assignment, homework, or project for any reason, you may make up the assignment within one week of the original due date with no grade penalty.

Similarly, if you miss a quiz, you may make it up within one week with no penalty. Be aware that I have limited time slots when I can proctor make-up quizzes, and it is your responsibility to make one of those time slots work. **If you miss more than two quizzes, you will need proof of an excused absence before you can take the makeup quiz.**

Quiz dates

Quiz 1	Thursday, Sep 1	Quiz 7	Thursday, Oct 27
Quiz 2	Thursday, Sep 8	Quiz 8	Thursday, Nov 3
Quiz 3	Tuesday, Sep 13	Quiz 9	Thursday, Nov 10
Quiz 4	Tuesday, Sep 27	Quiz 10	Tuesday, Nov 22
Quiz 5	Tuesday, Oct 4	Quiz 11	Thursday, Dec 1
Quiz 6	Tuesday, Oct 11	Quiz 12	Tuesday, Dec 13

These assessments will take place in our regular lecture classroom during regular lecture time. The exception is **Quiz 12**, which will take place during Finals Week. **Quiz 12 will take place on Tuesday, Dec 13 at 9 AM.**

On Canvas you will find a detailed schedule of our daily lessons and assignments.

University policies

1. **Academic policies:** This class will adhere to all of UK's official academic policies, which you can find here: <https://www.uky.edu/universitysenate/acadpolicy>
2. **Integrity, Cheating and Plagiarism:** You are expected to maintain academic honesty in this course. You may work together on homework assignments, but the final submitted work must be your own. Quizzes are individual assignments, and unless otherwise stated, you may not use any outside resources on these assessments. You may not discuss quiz problems with other students who have not already taken the quiz. Remember, giving information about an assignment is considered cheating in the same way that receiving information is cheating. If you are unsure whether you are allowed to work with another person or use a certain resources on an assignment, please ask me!