Syllabus
Math 3233-201: Introduction to Modern Math
Spring 2026

Section Information

Instructor

Instructor: Dr. Sarah Cobb (she/her)
Office: Bolin 122D
Office phone: (940) 397-4441
E-mail: sarah.cobb@msutexas.edu
Drop-in Office hours:

- Monday: 9:00-10:00
- Tuesday: 11:00-11:25
- Wednesday: 9:00-10:00
- Thursday: 11:00-11:25
- Friday: 10:00-11:00

Office hours also available by appointment.

Schedule

Class meetings: Tues/Thurs 9:30—10:50 AM, Bolin 144

Unit Exams: March 3 and April 14 during class time

Final Exam: Tuesday, May 12, 8:00—10:00 AM, Bolin 144

Catalog information

Course Description

Description: Introduction to logic and methods of proof, set operations, equivalence relations, functions, mathematical induction, and cardinality. Other topics related to the study of the structure of mathematical proof may be included.

Prerequisite: Math 1634 with a grade of C or better

Learning Objectives

Upon successful completion of this course, students will:

1. Students will fluently describe sets, relations, and functions using precise terminology.
2. Students will construct and analyze mathematical statements using appropriate examples and/or techniques of proof or disproof.
3. Students will understand the basic rules of logic, including the role of axioms or assumptions in the application of theorems and definitions. (Program SLO 2)
4. Students will demonstrate the ability to communicate mathematical ideas clearly using correct mathematical terminology and proper mathematical notation. (Program SLO 5)
5. Students will demonstrate the ability to proficiently construct logical arguments and rigorous proofs. (Program SLO 6)

6. Students will demonstrate skills in the mathematical process: define problems, uncover relevant patterns, form conjectures, and engage in formal proof techniques. (Program SLO 3)

Material Covered

- Introduction to sets and set operations
- Introduction to logic
- Introduction to mathematical proof
- Proof techniques: direct proof, contrapositive proof, proof by contradiction, counterexamples
- Statements and their proofs: biconditional statements, equivalent statements, existence statements, uniqueness proofs
- Proofs about sets
- Introduction to relations and functions

Course Materials

Textbook

The text for this course is *Book of Proof* by Richard Hammack. The book is available to download as a pdf of through the D2L page. You may buy a copy on paper ($20-35 from Amazon, depending on the edition) but you can also work from the pdf.

Additional Resources on D2L

Additional materials needed will be posted or linked through D2L. Make sure that you check for updates regularly. I recommend downloading the Brightspace Pulse app.

Calculator

A calculator is not required for this course. You may generally use a scientific (not graphing) calculator on exams, but you won't need one.

Coursework and Grading

Grading

Your course grade will be computed based on the following categories:

Category	Points
Homework	100 points
Unit Exams	200 points
Proof Portfolio	100 points
Cumulative Final Exam	150 points
Total	550 points

Your final letter grade will be based on the percentage earned. The table below shows minimum points needed to guarantee each letter grade.

Grade	Percentage
A	At least 495 points
B	At least 440 points
C	At least 385 points
D	At least 330 points
F	Less than 330 points

Note that a higher grade may be assigned at the instructor's discretion—the material in this course does not lend itself well to a standard percentage scale, and there will likely be some adjustment. Additional communication about grade computation will be given throughout the semester.

Course Assignments

Homework

Homework will be assigned regularly; generally an assignment will be due at the beginning of class every Tuesday. You should expect to spend a significant amount of time on each assignment, and you should plan to work on it on at least three or four different days, since coming back to a problem later is often more effective than working for an extended time.

Refer to the Homework Information Sheet (available on D2L) for additional guidelines on homework.

Occasional in-class activities or assigned work outside of regular homework will be counted as a portion of your homework grade.

Late Homework

Homework is due in class at 9:30 AM on the due date. Homework turned in after this will be considered late. Homework may be turned in electronically as long as it is scanned (not photographed) and turned in as a single pdf document. Late homework is accepted as follows: you have two penalty-free late days over the course of the semester. This can be two assignments turned in one day late or one assignment turned in two days late. This is intended to account for illness, unexpected circumstances, and all other reasons an assignment might be late—plan accordingly. Beyond those two days, an assignment will lose 25% of the earned points for every day it is late. The number of days late is computed by the number of whole or partial 24-hour periods than have passed since it was due.

Unit Exams

The unit exams for this class are ***March 3 and April 14**, during class time. There may be online, take-home, or extended time parts of some exams; information will be communicated closer to the deadline.

If you must miss an exam, please notify me by email at least one week ahead of the test date and arrange to take the test early. In the case of unexpected and unavoidable absences (such as hospitalization), you must let me know on the day of the test, and documentation may be required. At the instructor's discretion a missed exam may be made up, dropped from the final grade, replaced with your grade on the final exam, or counted as a zero. Clear and prompt communication is essential in the case of absence.

Proof Portfolio

Your proof portfolio for this course will consist of a collection of revised versions of proofs from homework assignments or tests. This is an opportunity for you to show your ability to create polished proofs when you take time and revise—the proofs should represent your best work.

Over the course of the semester, Dr. Cobb will maintain a list of what proofs may be revised for inclusion in the portfolio and guidelines for choosing proofs. There will also be an opportunity to ask Dr. Cobb for feedback on your proofs.

The proof portfolio is due at 5:00 PM on Thursday, May 14. Since this is the end of the final exam period, it cannot be turned in late.

Final Exam

The final exam for this course is Tuesday, May 12, 8:00—10:00 AM, Bolin 144. It cannot be taken early or late for anything except an emergency. Please consult the finals schedule before planning end-of-semester travel, as scheduled travel is not an emergency and you will not be able to reschedule the exam.

Course Policies

Attendance

Attendance in class is essential for your learning and is therefore required. I do not generally distinguish between excused and unexcused absences, since it is not my role to decide the relative importance of competing priorities in your life; attending class should be a high priority, but it isn't (and shouldn't be) your only priority. The policy below is intended to be flexible enough to allow for minor illness, emergencies for those close to you, transportation difficulties, and other necessary absences. If there are circumstances that cause you to miss a significant amount of class, please communicate promptly with me about it and I will work with you on a plan to stay caught up on course material and remain enrolled in the class.

You are expected to attend every class, in person, if at all possible. This includes arriving on time; staying to the end; being prepared; participating in class; and behaving respectfully. If you must miss class, please consult a classmate to find out what you missed.

At the instructor's discretion, students who miss more than four classes or portions of classes for reasons other than university-excused absences may be dropped from the course with a grade of F.

Learning Environment

I am committed to providing an environment that promotes learning for all students. It is important to me that this class is a welcoming, inclusive, and accessible space for all students. I am available and willing to address your issues and concerns as they arise.

Much of the learning in this class will involve interaction with your peers. In order for that to be effective, we must all conduct ourselves with respect, generosity, and openness.

Classroom Behavior

Respectful behavior in the classroom is required. Any student who is disruptive will be asked to leave class. As much as possible, please avoid leaving or entering the room during class. Make sure all electronic devices are silenced. Use of cell phones in class is not allowed.

Electronic Devices

Use of computers is not allowed in the classroom. This includes laptops, cell phones, tablets, and other similar devices. (Calculators are allowed.) Students using such devices may be asked to leave class. If a cell phone or similar device is visible or audible during an exam, you may receive a zero on that exam.

If this policy presents a serious problem, please let me know; exceptions may be made in special circumstances.

Changes

Some portions of this syllabus may alter during the semester. When possible, I will announce changes in class as well as sending an email. You are responsible for knowing everything I announce in class as well as everything I email to your official university email address. If you miss class, make sure you talk to someone who was there.

Academic Misconduct

Any incident in which a student submits work for grading that does not reflect their own effort is considered academic dishonesty. This includes using sources (by paraphrase or direct quotation) without proper attribution; collaborating on work where collaboration is not authorized; use of sources on an assignment or test where those sources are not authorized; and turning in work completed by another person.

Cheating on any work in this course will result in no credit for that work. Egregious or repeated incidents will result in more serious consequences, such as a failing grade in the course or dismissal from your academic program. All incidents of academic misconduct will be reported as specified in your student handbook.

Please refer to the homework information sheet for guidance on allowable sources and collaboration on homework assignments.

Student Handbook

Make sure you are familiar with university policies as described in the student handbook. This course will abide by all university policies.

Desire-to-Learn (D2L)

Extensive use of the MSU D2L program is a part of this course. Each student is expected to be familiar with this program and to regularly check posted information. D2L provides a primary source of communication regarding assignments, examination materials, and general course information. You can log into D2L through the MSU Homepage. Downloading the Brightspace Pulse app is also recommended. If you experience difficulties, please contact the technicians listed for the program or contact your instructor.

Office Hours

Office hours are time that I have set aside to answer questions about the course or course material. You are welcome to drop in during the scheduled office hours, and you do not need an appointment. I am happy to answer questions about homework problems, quizzes and tests, study practices, grades, and other topics. These are intended to be a resource for you, and talking to me during office hours is a good first step if you find yourself struggling.

If you are unable to attend scheduled office hours, you can email me (sarah.cobb@msutexas.edu) to set up an appointment at another time. In your email, please include your first and last name and some times that you'd be available. I am also willing to schedule virtual office hours, but it is more difficult to clearly communicate math remotely.

Communicating with Me

The best way to reach me is by email (sarah.cobb@msutexas.edu). I will generally respond to email within 24 to 48 hours. I will be in my office during office hours each week and often at other times; feel free to stop by. Any communication not in writing or by email should be considered unofficial.

Services for Students With Disabilities

MSU is committed to providing reasonable accommodations to allow students with disabilities to participate fully in its academic and campus life. Any student who may require special arrangements in order to meet the course requirements should contact me as soon as possible to make necessary arrangements. Students must present appropriate verification provided by Disability Support Services. The best time to present this documentation in private is during office hours. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Disability Support Services located in Clark Student Center, Room 168 or call 940-397-4140.

Inclement Weather

If the university closes for inclement weather (or another reason), class will not meet. Any scheduled test or due date will be postponed until the next scheduled class meeting. Additional information will be posted on D2L.

Final Note

The work you will be doing in this course will be different from your work in earlier math courses—Introduction to Modern Math is intended to teach you to think like a mathematician. It's one of the earliest courses in our curriculum that isn't required by any other major. The skills that are sharpened by this work are clear communication; precise use of vocabulary; and building logical chains of ideas. After successfully completing this class, you will have a much better understanding of the real work of mathematics.

This class is hard for many students. The skills that you have relied on in Calculus and Linear Algebra are different from the skills that you will need for this work. In the first part of the semester, it may feel like a lot of work for small results. You likely won't master the material as quickly as you are used to. Learning to write proofs has a high potential to make students feel lost, frustrated, insecure, behind, and incapable. These are natural and normal feelings.

***DON'T GIVE UP!**

You are enrolled in this class because you don't yet know the material. The only way to become good at something is by doing it slowly and painstakingly at first.

Please talk to me about your concerns should you feel overwhelmed—I am here to support your learning and your success. We can chart a way forward.