

Mathematics 3345: Foundations of Higher Mathematics
Section 14444
Autumn 2021

Instructor: Max Kutler

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Office Hours: Monday, Wednesday, Thursday 2–3 pm, and by appointment

Class Meetings: Monday, Wednesday, Friday 11:30 am–12:25 pm, Evans Lab 2001

Course Webpage: <https://people.math.osu.edu/kutler.8/math3345/>.

Carmen: Grades and announcements will be posted to <https://carmen.osu.edu/>.

Required Text: Neil Falkner, *The Fundamentals of Higher Mathematics*, Autumn 2021 edition.

Course Content: The main goal of this course is to learn how to read and write mathematical proofs. Students are expected to develop the ability to communicate mathematics clearly and effectively. Learning to write mathematics, like any other skill, requires sustained effort over time. The successful student will

- read and study examples of mathematical writing;
- ask questions and seek out help as necessary;
- solicit and respond to constructive feedback;
- be persistent and work through perceived (and productive!) failure.

The secondary goal of this course is to encounter and understand some of the fundamental objects and ideas upon which modern mathematics is built. Topics include logic, induction, divisibility, prime numbers, sets, functions, and cardinality. Students are expected to memorize definitions and statements of theorems.

Homework: Homework will be assigned **each class meeting**. You are expected to complete each assignment before coming to the next class meeting.

Solutions must be written clearly, legibly, and with appropriate style. Among other things, this means your work should include proper grammar, punctuation, and spelling. You should use fresh, clean standard letter-size paper ($8\frac{1}{2}'' \times 11''$) in the standard orientation, and leave at least a 1'' margin on all sides. You are expected to write a draft of each of your solutions before writing the final, edited form. I recommend *Guidelines for Good Mathematical Writing* by Francis Su as a basic style guide.

You are encouraged to work with other students in the class on the homework, and it is appropriate to acknowledge the assistance of others. While it may be tempting to consult people or resources outside of the class, it will be best for your learning process to refrain from doing so. All solutions you submit must be your own.

Bonus problems: There will be occasional bonus problems, which will be more difficult than the typical homework problems. These problems are worth extra credit, and they give students the opportunity to distinguish themselves (e.g., if they would like to request a letter of recommendation from the instructor). Extra credit earned from bonus problems will be used to decide grades in border cases.

Exams: There will be two in-class midterm exams and a comprehensive final exam.

1. Exam 1: **Wednesday, September 29**
2. Exam 2: **Wednesday, November 10**
3. Final Exam: **Thursday, December 16, 10:00-11:45 am**

Grading: Your grade will be based on homework, and three exams. Whichever of these four elements receives the highest score will count for 40% of your course grade; the remaining three elements will count for 20% each.

Attendance: Regular attendance is expected and is vital to success in this course. While you will not be explicitly graded on attendance, repeated absences will likely impact your ability to keep up with the course material.

You are responsible for all announcements made in class, as well as any emails sent to your OSU email account and announcements posted to Carmen.

Special Accommodations: The University strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. 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; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Academic Misconduct: 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 3335-5-48.7). For additional information, see the Code of Student Conduct at <http://studentlife.osu.edu/csc/>.

Health and Safety: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

Changes to this Syllabus: A current version of this syllabus may be found at the course webpage. This is the syllabus as of August 25, 2021.