Mathematics 3345: Foundations of Higher Mathematics
Class Number 26835
Spring 2024

Instructor: Max Kutler **Email:** `kutler.8@osu.edu`

Office: Mathematics Tower (MW) 756

Office Hours: Monday, Thursday, Friday 10–11 am, and by appointment

Class Meetings: Monday, Wednesday, Friday 1:50–2:45 pm, University Hall 038

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

Canvas: Grades and announcements will be posted to `https://osu.instructure.com`.

Required Text: Neil Falkner, *The Fundamentals of Higher Mathematics*, Spring 2024 edition.

A free pdf of the textbook is posted on Canvas. Students wishing to purchase a hard copy may do so through the bookstore.

Course Content: The primary goal of this course is to teach students 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.

Over the semester, students will encounter 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: There will be **two assignments due each week**. Typically, homework assignments will be submitted **at the beginning of class on Mondays and Fridays.**

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 offer you the opportunity to distinguish yourself. Extra credit earned from bonus problems will be added to the homework component of your grade.

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

1. Exam 1: **Wednesday, February 7**

2. Exam 2: **Wednesday, March 27**

3. Final Exam: **Tuesday, April 30, 4:00–5:45 pm**

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

Attendance: All class meetings will occur in-person. You are expected to attend each class. If you must miss a class due to illness, university-mandated quarantine, university event, or other valid reason, please email `kutler.8@osu.edu` with appropriate documentation. In the case of an excused absence, particularly those spanning multiple class periods, arrangements will be made for you to attend class over Zoom.

Regular attendance 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/`.

Changes to this Syllabus: A current version of this syllabus may be found at the course webpage. This is the syllabus as of January 8, 2024.