

Syllabus

Fall 2026

Math 215 – Introduction to Advanced Mathematics

Instructor: Lev Reyzin, SEO 417, lreyzin@uic.edu

Time and location: M-W-F, 10:00 – 10:50 am, Addams Hall (SH) 310

Credit hours: 3 credits (41817)

Prerequisite background: Grade of C or better in MATH 181 and approval of the department.

Office hours: Tu 11:00–11:50 am (online), Fr 11:00–11:50 am in-office

Website: http://homepages.math.uic.edu/~lreyzin/f26_math215/

Online textbook: Peter J. Eccles, *An Introduction to Mathematical Reasoning: numbers, sets and functions*

Topics: This course offers an introduction to methods of proofs used in different fields in mathematics.

Weekly schedule: This is subject to change.

- week 1: mathematical language and implications
- week 2: proofs and proof by contradiction
- week 3: mathematical induction
- week 4: sets and set operations
- week 5: quantifiers and logical negation,
- week 6: functions
- week 7: injections, surjections, and bijections
- week 8: counting and finite sets
- week 9: counting functions and subsets

- week 10: number systems and infinite sets
- week 11: division theorem and Euclidean algorithm
- week 12: GCDs and linear Diophantine equations
- week 13: integer congruences and linear congruences
- week 14: congruence classes and equivalence relations
- week 15: prime numbers and congruence modulo a prime

Assignment due dates: Homework will be bi-weekly and due on Mondays by class start. Exact amounts and dates are subject to change.

Grading: The following grading scheme will be used: 90%+: A , 80%+: B (at least), 70%+: C (at least), 60%+: D (at least). The breakdown will be as follows:

- 50% take-home problem sets
- 30% final exam
- 20% midterm exam

Collaboration policy: Unless otherwise specified on an assignment, students may discuss problem sets with one another and use outside resources, including LLMs (in fact, some AI use will be required for the course). Students are strongly encouraged to write solutions on their own. Exams will be done by the students without any outside assistance (by humans or computers).

Late work policy: In general, late work will not be accepted. Problem sets are to be turned in by 10 am online on the day they are due. Exceptions must be asked for in advance of the due date and will be made rarely, on a case-by-case basis.

Classroom environment: University classes play an important role in educating students and imparting a deep understanding of the course materials and topics. With this goal in mind, students are urged to speak their minds, explore ideas and arguments, play devil's advocate, and engage in

civil but robust discussions. Students ought to do business in the proper currency of respectful intellectual discourse—a currency consisting of reasons, evidence, and arguments.

Disability policy: Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at 312/413-2183 (voice) or 312/413-0123 (TTY).

Disclaimer This syllabus is intended to give the student guidance on what may be covered during the semester and will be followed as closely as possible. The instructor, however, reserves the right to modify, supplement, and make changes as course needs arise.