

Math 307—Spring 2025—CRN 33086

Course Information

Instructor	Robert Lipshitz
e-mail	lipshitz@uoregon.edu
Office	Fenton 303
Office Hours	In person: M 2:00 - 3:00, W 4:00 - 5:00. Zoom: TBD. Time and format subject to change.

Course Prerequisites	Math 247, 252, or 262; or instructor's permission.								
Course Requirements	There will be written homework due roughly once a week, by Canvas upload, two midterm exams, and a final exam. There <i>will</i> be new material covered and homework assignments due during the last week of classes.								
Test Dates	<i>Midterm 1</i> : April 22. Subject to change if necessary. <i>Midterm 2</i> : May 13. Subject to change if necessary. <i>Final exam</i> : per Registrar's schedule. See below for policy regarding missed exams.								
Grading Policy	<table><tr><td>Homework</td><td>30%</td></tr><tr><td>Midterm 1</td><td>20%</td></tr><tr><td>Midterm 2</td><td>20%</td></tr><tr><td>Final Exam</td><td>30%</td></tr></table> Late homework will be accepted with a 25% linear penalty per day or part of a day. The lowest two homework scores will be dropped to accommodate illnesses and other unforeseen events.	Homework	30%	Midterm 1	20%	Midterm 2	20%	Final Exam	30%
Homework	30%								
Midterm 1	20%								
Midterm 2	20%								
Final Exam	30%								
Students with disabilities	The University of Oregon is committed to an inclusive learning environment. If you have a disability which may impact your performance on exams, please contact the Accessible Education Center to discuss appropriate accommodations. If there are other disability-related barriers to your participation in the course, please either discuss them with me directly or consult with the Accessible Education Center.								

Course Policies

- Cell phones are not permitted in this class except by instructor's permission. Other electronic devices (computers, tablets, etc.) may be used *only for taking notes*. (They don't bother me, but there is strong evidence they distract other students.)
- You should read the sections in the textbook once *before* they are covered in class, and then again after they are covered in class.
- Using electronics, notes (other than those I specifically provide for the exam), or the textbook on exams is not permitted. Getting help from anyone other than the instructor on an exam is also cheating. Any instance of cheating will result in being reported to the university, with a recommendation of failing the class.
- Posting any course materials to Chegg or other online sites is a violation of policies, and will be reported to the university for disciplinary action.
- You are welcome to work on the homework together, but you must write up your final answers by yourself. Failure to abide by this policy constitutes cheating.
- Any resources you use when solving homework problems, other than the textbooks, must be cited in your homework. This includes human resources: if someone helped you with the homework, say who and what they helped you with. You may *not* use electronic resources (e.g., Google) other than the textbook and recommended textbooks. Failure to follow this policy constitutes cheating; if you are caught cheating on the homework you will be reported to the administration with a recommendation to receive a 0 on the homework portion of the class. Failure to cite sources constitutes academic misconduct, and will be treated the same way as other forms of cheating.

Missed Exams

- If you have a conflict with a midterm exam and you alert me at least 10 days in advance, you will have the opportunity to take a version the exam a few days early, without penalty. In particular, this is the mechanism for accommodating cases 3 and 4 in the UO Attendance and Engagement policy.
- If you miss one midterm exam, I will compute your midterm exam score by taking a weighted average of your score on the other midterm exam and the final (after normalizing using the class means and standard deviations).
- If you miss both midterm exams, you will have the opportunity to take a makeup midterm 2 within two weeks of midterm 2, at a 15% linear penalty. That is, whatever score you get on the makeup exam will be multiplied by 0.85. If you do not take the exam within two weeks, your midterm exam score will be computed as zero.
- If you miss the final exam and are otherwise passing the class, you will receive an incomplete in the class and have the option to take a makeup exam in the first two weeks of the winter quarter, with a 5% linear penalty. If you do not take the exam in that time, I will compute your grade as if you received a zero on the final exam.
- If you miss the final exam but were otherwise failing the class, you will not have an opportunity to re-take the exam, and will receive and F in the class.

Course Resources

- Textbooks:
 - Robert Exner et al, *Elements of Mathematics, Book 1: Introductory Logic*. Linked from the course webpage.

- Ted Sundstrom, *Mathematical Reasoning: Writing and Proof*, Version 3. Linked from the course webpage.
- John P. D’Angelo and Douglas B. West, *Mathematical Thinking: Problem-Solving and Proofs*, 2nd Edition. Should be available on reserve in the library and may be available online.
- We will use Canvas to track grades and post some solutions.
- There is also a non-Canvas course website, with up-to-date schedule and assignments:

<http://pages.uoregon.edu/lipshitz/Teaching/Sp25Ma307.html>



Getting Help. I have office hours every week. Some peer tutors in the Math Library may also be able to help. Get help as soon as you feel confused. See the course webpage for additional advice.

Course goals. The goal of this course is for students to learn to read and write simple proofs, and in particular to tell whether a proof is sound. Although there will be some new material that we will use to practice with proofs, unlike most mathematics courses, the main goals are two particular skills—reading and writing proofs—not new material.

Specific “learning outcomes” include:

- Being able to interpret and use basic concepts from mathematical logic, such as Modus Ponens, in the context of proofs.
- Understanding the notions of tautologies, contradictions, soundness, validity, logical arguments, and truth tables.
- Interpreting and using quantifiers (for all, their exist) in arguments.
- Being able to use proof techniques such as proof by contradiction, counterexamples.
- Being able to write proofs by induction and strong induction (or the well-ordering principle).
- Understanding basic axioms for the integers and more general rings and modular arithmetic, and write simple proofs from these axioms.
- Being able to use the formal definitions of convergence, limits, and continuity in simple examples.

General university policies

General university policies, discussing academic disruptions, support resources, and so on, are here:

<https://teaching.uoregon.edu/university-course-policies>

Grading standards

Grades will be assigned consistent with the following standards:

- A: Demonstrated comprehensive mastery of the course material and techniques.
- B: Demonstrated a solid command of all key concepts and techniques in the course.
- C: A solid command of many key concepts of the class, but with some serious gaps.

- D: Did not demonstrate understanding of substantial parts of the course.
- F: Did not demonstrate understanding of even more substantial parts of the course, or participated in some kind of academic dishonesty.

Pluses and minuses indicate a slightly stronger or weaker demonstrated command of the material. Note that grades are assigned on the basis of accomplishment, not effort.

A combined score of 90% or more will guarantee you receive *at least* an A-, a combined score of 80% or more will guarantee you receive at least a B-, and a combined score of 70% or more will guarantee you receive at least a C-; but the cutoffs may be more generous than this.

Possible Labor Actions This Term

I am part of the bargaining unit of United Academics, the union representing UO faculty. UO faculty have been working without a contract since the summer, and formal bargaining sessions to agree on a new contract have not been successful so far. The union may go on strike, as soon as the first week of the Spring Quarter. A strike means that instructors, researchers, and librarians will stop all forms of work for the university: research, teaching, and service. The administration may attempt to replace faculty with others during a strike. If a person claiming to be an instructor appears while the union is still on strike, that person is a scab.

If a faculty strike happens, I will tell you how it affects the course schedule and grading, but probably not until the strike is resolved.

There may also be a strike by undergraduate student workers. In that case, homework will likely not be graded during the strike, and the weighting of different components of the course (homework versus exams) will be adjusted accordingly.