

Math 261, Calculus with Theory I, Fall 2019

Class Time: MTuWTh 3-3:50p.m. in 106 Deady
Instructor: Dr. Marcin Bownik
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Office Hours: 2-3p.m. Mon., 11a.m.-12p.m. Wed., and 2-3p.m. Thu., or by appointment
Textbook: M. Spivak *Calculus*, 4th ed.

- 1. Course outline.** This course introduces students to differential calculus from the theoretical point of view, how calculus works as well as how to use it. Topics include limits, continuity, and derivatives. An ability to read, understand, and write proofs will be stressed. A precise knowledge of concepts and definitions is essential. The course, which is the first of three in the sequence, covers most of the chapters 1–11 of Spivak.
- 2. Learning Outcomes.** Students should be able to solve problems by providing clear and logical steps such as:
 - show inequalities between real numbers,
 - give proofs using mathematical induction,
 - show properties and graphs of real functions,
 - find limits of functions by the definition,
 - check continuity and prove properties of continuous functions,
 - compute least upper bounds,
 - check differentiability and find derivatives by the definition,
 - compute derivatives using differentiation rules, and
 - find local extrema.
- 3. Exams.** There will be two midterm in-class exams on Wed. 10/23, and Wed. 11/13 and a final exam on Thu. 12/12, 2:45–4:45p.m.
- 4. Discussions.** In addition to 3 weekly lectures on MWF, there is a discussion class on Tuesday.
- 5. Homework.** Homework problems will be assigned every week and be due in class on Wednesday on the material of the previous week. No late homework will be accepted. In general, students may find homework problems in this course to be difficult and challenging. You should expect to spend a long time to do some of the problems. This is perfectly normal and expected. Hard work and practice with homework problems are essential in succeeding in this course.
- 6. Grading.** The grading distribution will be as follows:

Homework:	20%
Each of the Midterm Exams:	20%
Final Exam:	40%