

# Course Syllabus

[Jump to Today](#)



## Fundamentals of Analysis I

### Textbook

Abbott: **Understanding Analysis**

### Contact Information

- Classroom: Fenton 117
- Instructor: Yuan Xu
- Office: 101 University Hall
- Office hour: Tu 1:00-1:50 pm & WF 3:00 - 3:50 pm or by appointment

### Course description

You have encountered concepts such as limit, continuity, derivative and integral in Calculus, but these are mostly treated computationally with little justification or proof. We will study these concepts again but do it right, do it with rigorous mathematical proof. The course serves as an entry into proof based mathematics that is fundamental for understanding modern mathematics. We will cover most of the first four chapters of the textbook. We begin from an introduction to the basics (Sections 1.1 -14, part of 1.5), which paves the way for a rigorous treatment of limits of sequences and infinite series (Sections 2.2 to 2.7). We then discuss basic topology of the real line, (open and closed sets, compact sets, Sections 3.2-3.3), which prepares us for a serious study of continuity of functions (Sections 4.1 -4.2). A follow-up course, Math 317, will discuss continuity, derivatives, limit of sequence of functions, and integrals.

### Homework

There will be a homework assignment for each week. Homework will be collected each Wednesday in class on the material of the previous week. Late homework will not be accepted. Your lowest homework score will be dropped. It is very important to keep up with your homework. Start it early, do not wait until the night before you have to turn it in.

### Quizzes

There will be two quizzes of 25-minutes in week 3 (Friday, Oct. 15) and week 8 (Monday, Nov. 22).

### Exams

There will be one midterm exam in class on Monday, November 1. If you must miss this exam due to extraordinary circumstances, you must ask for my permission and schedule a make-up exam in advance. The final exam is scheduled on 14:45 Thursday, December 10 .

## Grade

Your course grade will be based on your homework, project, midterm and final.

Homework: 20% Quizzes: 20% Midterm Exam: 20% Final 40%

## Learning outcomes

Students must be able to demonstrate an understanding of the nature of mathematical proof by proving various assertions. They should be able to not only calculate but prove their answer for various limits. They should be able to give proofs related to open/closed sets, compactness, etc. They should be able to understand rigorous definition of limit, both sequential and functional. They should be able to compute and prove the correctness of various convergence tests for infinite series, as well as understand and deal with continuity.

## Incomplete

Incomplete are only awarded in the Mathematics Department when two criteria have been satisfied: first, a student must have a passing grade at the time the I is assigned; secondly, some work could not be completed due to extenuating circumstances (illness, auto accident, etc.). Under no circumstances will an I be awarded as a substitute for a W, D or F/N.

## Disability Service

If you are a student with a documented disability please meet with me soon to discuss your needs. If you have not already requested a notification letter from Disability Services outlining recommended accommodations, please do so soon.

## Academic Misconduct

The University Student Conduct Code (available at <http://dos.uoregon.edu/conduct>) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act.

## Course Summary