Elementary Analysis
Math 316, CRN 13770

Fall, 2018

Lecture: MWF 9:00-9:50, 254 STB

Instructor: Yuan Xu, Office: Deady 101, Telephone: 346-5619, e-mail: yuan@uoregon.edu.

Webpage: http://uoregon.edu/~yuan/Teaching/M316.html

Office Hours: MF 1:00-1:50, W 10:00-10:50 or by appointment.

Textbook

K. Ross: Elementary Analysis: The Theory of Calculus

Prerequisite

Math 253. Math 307 is helpful.

Course description

You have encountered concepts such as limit, continuity, derivative and integrals in Calculus, but these were 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 and prepare students for more theoretically oriented 400 level courses. We will cover most of the first three chapters of the textbook. We begin from the introduction to the basics (real numbers), which paves the way for a rigorous treatment of limits of sequences and infinite series. We then discuss limit of sequences, centered at understanding limit process, and infinite series. Next we study continuity of functions and limit of functions. A follow-up course, Math 317, will discuss limit of sequence of functions, differentiation and integrations.

Students should be familiar with the mechanics of calculus. What this course will stress are the rigorous foundations of the subject.

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 limits and continuity 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.

Homework
There will be a homework assignment for each week. You can check the ASSIGNMENTS here. 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. 13) and week 8 (Friday, Nov. 17).

Exams

There will be one midterm exam in Week 6 (Monday, October 30). If you must miss an exam due to extraordinary circumstances, you must get my permission and schedule a make-up exam in advance. The final exam is scheduled on 10:15 Tuesday, December 5 at 117 Fenton.

Grade

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

- Homework: 20%
- Quiz 1: 10%
- Quiz 2: 10%
- Midterm Exam: 20%
- Final Exam: 40%

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. If you find yourself in trouble, drop the course!

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 as soon as possible.

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.