



Hunan University MATH 27: Introduction to Analysis

Professor: To be announced
Total contact hours: 54 hours
Credit: 4

Course Description

This course covers several topics, for instance, real numbers, limits of sequences and functions, continuity, infinite series, power series, differentiation, the Riemann integral and etc. Many examples and problems are given to illustrate the relevant theory, and exercises at the end of each chapter are given to consolidate the knowledge points. It also presents analysis in a unified way as the mathematics based on inequalities, estimations, and approximations.

Required Material

Textbook: *Introduction to Analysis*, 31 August, 1998, P. Mattuck, Pearson, ISBN:0130811327

Reference books

Analysis with an Introduction to Proof, 5th Edition, 1 January, 2013, Steven R. Lay. ISBN: 032174747X.

Introduction to Analysis, 5th Edition, by Edward D. Gaughan. ISBN-10: 0821847872

Grading

- Assignments and exercises 20%
- Quizzes 20%
- Midterm 20%
- Final Exam 40%

A+ 96-100	A 90-95	A- 85-89
B+ 82-84	B 78-81	B- 75-77
C+ 71-74	C 66-70	C- 62-65
D 60-61	F < 60	



Course Schedule

The course has 24 class sessions in total. All sessions are 2 hours and 15 minutes in length.
Note: the course outline and required readings are subject to change.

Class 1:

Introduction to the course

Real Numbers and Monotone Sequences

Class 2:

Estimations and Approximations.

Class 3:

The Limit of a Sequence.

The Error Term

Class 4:

Limit Theorems for Sequences

Quiz 1

Class 5:

The Completeness Principle

Class 6:

Infinite Series

Class 7:

Power Series

Class 8:

Functions of One Variable

Local and Global Behavior

Class 9:

Continuity and Limits of Functions

Quiz 2

Class 10:

The Intermediate Value Theorem.

Continuous Functions on Compact Intervals

Class 11:

Midterm



Class 12:

Differentiation: Local Properties

Class 13:

Differentiation: Global Properties

Class 14:

Linearization and Convexity

Taylor Approximation

Class 15:

Integrability

Quiz 3

Class 16:

The Riemann Integral

Class 17:

Derivatives and Integrals.

Improper Integrals.

Class 18:

Sequences and Series of Functions.

Quiz 4

Class 19:

Infinite Sets and the Lebesgue Integral.

Class 20:

Continuous Functions on the Plane.

Point-sets in the Plane.

Class 21:

Integrals with a Parameter.

Class 22:

Differentiating Improper Integrals

Class 23:

Overall Review

Class 24:

Final Exam



Attending Policy

Regular and prompt attendance is required. Under ordinary circumstances, you may miss two times without penalty. Each absence over this number will lower your course grade by a third of a letter and missing more than five classes may lead to a failing grade in the course. Arriving late and/or leaving before the end of the class period are equivalent to absences.

Policy on “Late Withdrawals”

In accordance with university policy, appeals for late withdrawal will be approved ONLY in case of medical emergency and similar crises.

Academic Honesty

Hunan University expects all students to do their own work. Instructors will fail assignments that show evidence of plagiarism or other forms of cheating, and will also report the student's name to the University administration. A student reported to the University for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

General Expectations:

Students are expected to:

- Attend all classes and be responsible for all materials covered in class and otherwise assigned;
- Complete the day's required reading and assignments before class;
- Review the previous day's notes before class and make notes about questions you have about the previous class or the day's reading;
- Participate in class discussions and complete required written work on time;
- Refrain from texting, phoning or engaging in computer activities unrelated to class during the class period;
- While class participation is welcome, even required, you are expected to refrain from private conversations during the class period.

Special Needs or Assistance

Please contact the Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material. Our goal is to help you learn, not to penalize you for issues which mask your learning.