

SYLLABUS FOR MATH 301/101[4042]

Introduction to Mathematical Analysis I

Spring 2008

TuTh.....8:10am - 9:50am (SOND003)

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Office Hours: TuTh 1:25-2:25PM, and/or by appointment

Textbook: *Introduction to Real Analysis*, by Bartle and Sherbert, Third Edition.

1 Course Overview

This course aims to teach the concept of “rigorous mathematical proof.” Mathematical analysis is the rigorous study of the concepts behind calculus. In this class the students will take a closer look at the concepts of real numbers, limits, continuity and differentiation and learn to do proofs. A primary goal is to acquire proficiency in the construction and writing of mathematical proofs. This is the main point on which the students will be evaluated. An additional goal is to learn useful mathematical results in analysis (the second point on which they will be evaluated). The techniques of proof and mathematical results learned in Math 301 will be required in higher-level mathematics courses. Since Math 301 is usually the first course that presents such a rigorous outlook on mathematics, it may be quite challenging. Therefore, it is necessary to do all the problems you can and participate in class discussions.

2 Syllabus

I will cover the material from appendix A and chapters 1-6. The syllabus may be modified if necessary as the class progresses. The main idea of this course is to apply rigorous mathematical reasoning (proofs) to demonstrate the answers to problems. It is a **difficult** course and requires a good deal of time and effort.

3 Grading Policy

Your grade in this course will be based on two in-class midterm exams, a comprehensive final exam, homework problems (I collect each Tuesday problems assigned during the previous week) and quizzes. These will have the following weights:

	Weight	Examination Date
Homework and quizzes	20%	Due every Tuesday
Exam 1	20%	Feb. 26, Tuesday
Exam 2	20%	Apr. 10, Thursday
Final Exam	40%	THURS, MAY 15, 8:00-10:00 AM

Letter grades for the course will be based on your total score(S) which is the weighted sum of scores in the two midterm exams, homework, and the final exam:

Score (S)	$85 < S \leq 100$	$75 < S \leq 85$	$65 < S \leq 75$	$50 < S \leq 65$	$0 \leq S \leq 50$
Grade	A	B	C	D	F

The grading system may be changed for the entire class or in individual cases at the discretion of the instructor. In particular, **class attendance and participation will be taken into account.**

4 Learning Goals

By the end of this course, you should:

- understand and remember the key ideas, concepts, definitions and results,
- be able to apply mathematical theorems correctly to answer questions,
- be able to choose the most useful theorem to solve a particular problem,
- appreciate the power of mathematical generalization (or abstraction) and understand how mathematical theory is developed,
- have enhanced your ability to communicate mathematical ideas orally and in writing,
- have enhanced your ability to learn mathematics by reading mathematics books.

To achieve these goals, you should:

- preview each section before it is covered in the class,
- come to every class and ask questions,
- read the theory and the examples worked out in the textbook before attempting to do the homework,
- form and participate in a study group,
- try hard to work out each exercise by yourself first and discuss it in a study group if necessary,
- do and hand in each assignment on time.

The Official UMBC Honors Code

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. For detailed policies on academic integrity consult:

Undergraduate students: Undergraduate Student Academic Conduct Policy

Graduate students: Policy and Procedures for Student Academic Misconduct

HOMEWORK

1. **due Feb. 12:** 1.1(4,6,8,10,14,19)
2. **due Feb. 19:** 1.2(2,4,6,18), 1.3(4,6,8,12)
3. **due Mar. 4:** 2.3(4, 8, 10)
4. **due Mar. 11:** 2.4(2,6,12,14)
5. **due Mar. 25:** 2.5(9,15,16,17)
6. **due April. 14 :** 4.1(7,10,11), 4.2(3,4,11), 4.3(3,5,12)
7. **due April. 29 :** 5.1 (5,10,12), 5.2 (3,4,9)