

MATH 352 - SYLLABUS

Analysis II

Spring 2007

Introduction to Analysis

Instructor: Dr. Katherine Socha, SB 168, (240) 895-4353, ksocha@smcm.edu

Office Hours: MW 4-5pm; by appointment; or (mostly) whenever my door is open.

TA: Josh Ballew, jtballew@smcm.edu, AIM screen name Jtb1523, campus x5863.

Class: MWF, 10:40–11:50, SB 111—NOT the purple room!

Text: We will follow the notes developed and written by Dr. Edward Odell, of The University of Texas at Austin.

Course Goals: Independence and Communication. An important part of being a professional (mathematician, educator, journalist, artist) is being able to communicate your work to an audience. In this course, you will develop the confidence to work through technical arguments on your own without having to resort to the authority of a book, a professor, or any one other than yourself. I also hope that you develop the skills to present your work carefully and clearly to each other.

Course Structure: This course is being taught in a style known in the mathematics community as the “modified Moore method,” which is a form of discovery learning. In general, our course will be a hybrid. I will take over the class every Monday — we can call these Managed Mondays — and give lectures or special projects designed to develop a big picture of analysis. Wednesdays and Fridays will be given over to student-driven presentations. You will not be assigned just one problem to present. Rather, you will be responsible for presenting any one of the three or four or five problems that are in line for that day. Which problem you present will be chosen randomly in class on presentation day. This means that you have to learn a few problems really, really well every two weeks.

You: By participating in this course, you agree (1) NOT to use other textbooks, former class notes, students from last year, or any other resource that is not from Katherine and this class; (2) to try your very best to prove each day’s results *before* coming to class—**even if these are not results you have to present!** (3) to be supportive of your classmates when asking questions about their solutions; (4) to use your study group for studying for exams and for trying out solutions, NOT for getting someone else’s idea about how to prove the theorems. Reality: yes, you could go to the library and find solutions for many of our problems in other books and present these as your own. Harsher reality: this is like getting someone else to solve your homework—you’ll suffer on the exams, and you’ll have wasted your time, becoming weaker intellectually and morally instead of growing stronger. (And, truthfully, most of us will be able to tell the difference between a polished book proof and an argument developed on one’s own, especially as the material gets more complicated.)

Assessment:

Midterm Exam (Monday, March 5):	20%
Nearly Weekly Quizzes:	15%
Presentation Quizzes:	10%
Bi-Weekly Homework:	10%
Participation:	10%
Presentation Writeups:	15%
Final Exam:	20%

Nearly Weekly Quiz: This assessment is a straightforward (1) “what do these words mean” kind of question, and (2) “can you apply the standard approach” kind of question. I expect everyone to get an A on the vocabulary part and an A or B on the simple problem. These will happen at the end of class on Mondays. The lowest quiz grade will be dropped from the quiz average.

Participation: This class is all about communicating mathematics with each other; **you are expected to present at least one problem roughly every two weeks.** Often, we will get stuck on something. In such a situation, we may work in small groups on the problem until we come to some resolution—full and cooperative participation with your group is expected. We encourage you to practice your presentations with Katherine or Josh. However, *participation* \neq *presentation*. If you are not present for your classmates’ presentations, then you are not participating fully.

Be warned: this semester we will keep a formal attendance record as part of the participation grade. If you must miss a class due to illness or other reasonable cause, please email Katherine as soon as possible. We will accept three sick/sports days; other absences may be excused.

Presentation Writeup: It is very difficult to simultaneously take notes on a proof and try to understand all the steps. This semester, we will require that presenters have their proofs written up in advance. If you are scheduled to present, then you must get a copy of your proofs (**one per sheet of paper, legibly hand-written is fine, but leave space between every line**) to Katherine BEFORE 9:00am on your presentation day. Katherine will photocopy all the proofs for the class and hand out the copies so that everyone can focus on understanding the ideas rather than taking notes. You are not expected to have a textbook-perfect proof; this is just to help everyone in class keep up with your presentation and understand the ideas. This means that you will have to prepare 3-5 write-ups every two weeks or so, in addition to your usual bi-weekly homework assignment.

Presentation Quiz: There are many pressures on you to put your time in many places. However, as we have learned in the fall semester of this class, presentations do not go well if the audience does not know what the words mean. Thus, EVERY PRESENTATION DAY we will take 5 minutes to write down the definition of the words being used in that day’s class. There may be some repetitions, since we spend many class periods exploring the consequences of certain definitions. As you see this quiz is worth 10% of your grade. Please take it seriously and don’t expect that you can memorize the definition in the 5 minutes before class.