

# MA550 Analysis I for Secondary Teachers

## Syllabus

This course is the first semester of a two-semester sequence which provides a rigorous introduction to real analysis focusing on structures and problems relevant to the secondary mathematics curriculum. Math 550 begins this introduction with set theory, logic, proof, the real number system, topology of the real line, limits, and continuity.

### Text

There is one required text for the course: *An Interactive Introduction to Mathematical Analysis*, by Jonathan Lewin.

### Grading

Course grades are based on homework assignments (50%), an in-class test (20%), and a cumulative final exam (30%).

### Reading and class preparation

There is a reading assignment associated with each class period. Although it is not generally possible to discuss every topic in class, students are responsible for the entire content of the reading assignment. *Test and exam questions may cover reading material not discussed explicitly in class.* Consequently it is very important to complete the reading assignments on time and to come to class prepared with questions.

### Make-up tests

Tests may be rescheduled only in cases of serious illness, bereavement, or other circumstances of similar gravity. Whenever possible, arrangements for make-up tests must be made *in advance* of the regularly scheduled testing time.

### Student conduct

Students are required to adhere to the University Policy on Academic Standards and Cheating, to the University Statement on Plagiarism and the Documentation of Written Work, and to the Code of Student Conduct as delineated in

the catalog of Undergraduate Programs, pp. 44–45 and 48–52. The Code is available online at the following web site:

[http://www.umb.edu/student\\_services/student\\_rights/code\\_conduct.html](http://www.umb.edu/student_services/student_rights/code_conduct.html)

### Course Calendar

**Weeks 1–2:** The emergence of rigorous calculus. Mathematical grammar.  
*Reading assignment:* Lewin, chapters 1 and 2.

**Weeks 3–4:** Strategies for writing proofs.  
*Reading assignment:* Lewin, chapter 3.

**Weeks 5–6:** Elements of set theory.  
*Reading assignment:* Lewin, chapter 4.

**Weeks 7–8:** Midterm exam. The real number system.  
*Reading assignment:* Lewin, chapter 5.

**Weeks 9–10:** Elementary topology of the real line.  
*Reading assignment:* Lewin, chapter 6.

**Weeks 11–12:** Limits of sequences.  
*Reading assignment:* Lewin, chapter 7.

**Weeks 13–14:** Limits and continuity of functions.  
*Reading assignment:* Lewin, chapter 8.

**Week 15:** Review and final exam.