MATH 3220-001

Foundations of Analysis I

Course Description (preliminary version)

Instructor: Henryk Hecht, JWB 329, hecht@math.utah.edu

Days/time/place: MWF 8:05 am-09:25 am in LCB 225.

Office Hours: to be decided during first class meeting


Additional notes will be posted, when appropriate.

General Goals: The main goal of this course is to provide students with a rigorous approach to the theory behind calculus. This is the first course of the MATH 3210–3220 sequence of Foundations of Analysis, a sequence designed to develop the mathematical sophistication of students, while giving them a much deeper understanding of calculus and its foundations than can be provided in the standard courses (MATH 1210, 1220, and 2210). The emphasis is on improving student's ability to understand and explain concepts in a logical and complete manner and refine their skill at proofs and mathematical arguments.

Course Description:

The course covers the following chapter-topics in the textbook. Some of the material (especially in Chapter 1) will be presented differently. Supplementary notes will be provided.

- Chapter 1: Real Numbers
- Chapter 2: Sequences
- Chapter 3: Continuous Functions
- Chapter 4: The Derivative
- Chapter 5: The Integral
- Chapter 6: Infinite Series
**Course Structure:** This course is mainly lecture based, with the instructor presenting material at the blackboard. However, students are strongly encouraged to ask questions, and become engaged in discussions.

**Grading:** Grading is based on homework, mid-term exams, and a final comprehensive exam. Homework is assigned on a weekly basis; many of the homework exercises involve proving theorems or providing examples that illustrate the course material. Grading is based on the following evaluation method:

- **Weekly homework assignments**, counting 30% toward the final
- **Two in-class midterms**, each counting 20% toward the final
- **Final exam**, counting 30% toward the final

The lowest three homework grades are dropped.

**ADA:** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. Students are encouraged to approach the instructor and the Center for Disability Services to make suitable arrangements if needing special accommodations.