

# Course Description Math 215: Introduction to Advanced Mathematics

John T. Baldwin

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Spring 2007

Class meets in 306 Addams Hall at 5-8 on Tuesday. Call Number: 24907

Office hours M at 3-4 or T: 10:30-11:30 or Th at 4-5 or by appointment in 327 SEO. (Subject to change)

Feel free to e-mail me at [jbaldwin@uic.edu](mailto:jbaldwin@uic.edu) or phone to make an appointment to discuss any difficulties that arise.

Office:327SEO.

Office phone:312-413-2149

e-mail:[jbaldwin@uic.edu](mailto:jbaldwin@uic.edu)

WEBSITE: <http://www2.math.uic.edu/~jbaldwin/math215/index>

Most assignments will be made only on the website, so check it frequently.

**Text:** P. Eccles, *An Introduction to Mathematical Reasoning*, Cambridge University Press.

**Prerequisites:** Grade of C or better in MATH 181 and approval of the department.

**Description** This is a first course in theoretical mathematics. It is a prerequisite to all advanced theoretical courses in the department. The *Primary Goal* of the course is to learn how to create and write mathematical proofs. This section is particularly aimed at those who will teach high school. This means that in addition we will pay particular attention to the communication of mathematical ideas. Proof is just the most refined version of such communication. We will introduce basic proof techniques, like proofs by induction and contradiction. We will also learn some basic mathematics that will be used in many advanced courses including: sets, functions, equivalence relations, cardinality and infinite sets. As time permits, we will cover most of Parts I-III and parts of Part V of the text.

**Resources** Material for this course will be disseminated via the text, the classroom assignments and lectures, doing the problems and exams, and supplemental material handed out in class or on the web. These four modes are supplementary and you are responsible for material presented in any of the forms.

**Reading Assignments** The weekly reading assignment is on the web. You are expected to read the assignment before class and there may be quick quizzes on the reading assignment. In particular, this means there is a double assignment the first week. By Jan. 22, you should have read Chapters 1-3.

**Practice Problems and Problem Sets:** Doing problems is the way to learn mathematics! Each chapter of the text has a number of exercises. These exercises have solutions in the back of the book. Several of these from each chapter are on the web at Practice problems. I encourage you to try them and check your answers in the back of the book. You are welcome to come talk to me about these problems. There will be weekly problem sets that will be collected and graded. The two lowest grades will be dropped. Late homework will be accepted only in exceptional circumstances. Most problem sets will consist of writing proofs. All proofs must be written in complete grammatical sentences. Since learning to write proofs is the central goal of the course you will be graded on the clarity of your writing.

You may discuss homework problems with other students, but you must write up your solution independently.

**Grading:** Your overall performance will be evaluated by the instructor. Contributing to that assessment, there will be 2 midterm exams, homework and a final exam. Each midterm will count for 25% of your final grade. The final will count for 35% and the problem sets will count for 15%. The lowest two problem set grades will be dropped.

Midterm 1: Tuesday February 13 Midterm 2: Tuesday March 20 Final Exam:  
Tuesday May 10

**Make up work:** A student who completes an assignment but gets a poor grade will be allowed to redo the assignment (with some additional questions). The maximal score after redoing is the original grade plus half the remaining points. The maximum score for which one can redo the assignment will vary.

**Students with Disabilities:** Students with disabilities who require accommodations for access and participation in this course must be registered with the Office of Disability Services (ODS). Please contact ODS at (312)413-2103 (voice) or (312)413-0123 (TTY).

**MSCS POLICY ON INCOMPLETE GRADES:** The last day to drop the course without penalty is September 5. Incomplete grades are for hardships that occur at the time of the final. IN grades must be approved by the Department. IN grades are normally made up during the first two weeks of the next semester.

**LAS DROP POLICY:** Students not in LAS should consult their college for drop regulations. Undergraduate students in LAS may drop classes during the first two weeks of the semester without prior approval and with no academic penalty. Thereafter, students may drop classes between the 3rd and end of the 6th week for a total of four times over their entire UIC enrollment. Students must see an LAS advisor on the 3rd floor of UH or by appointment (996-3366) to process a drop. It is recommended that students be provided with some evaluative measures of performance prior to the drop deadline. Students with serious extenuating circumstances after the 6th week should be referred to the LAS Academic Advising Center for guidance.