

Math 3003W - Transition to Advanced Math Spring 2007

Instructor: Dr. David Leach
Location: 303 Boyd
Time: MWF 11:15-12:10
Office: 317 Boyd
Website: <http://www.westga.edu/~cleach>
Phone: (678)-839-4127
Email: cleach@westga.edu
Textbook: *A Transition to Advanced Mathematics*, 6th Edition, by Smith, Eggen and St. Andre.

Learning Outcomes: Upon successful completion of the course, the student will

1. have an understanding of symbolic logic, and be able to translate sentences from English statements into logical expressions and back.
2. be familiar with methods of proof, including direct proof, proof by induction, contradiction, and contrapositive.
3. know the basic concepts of naive set theory.
4. know the basic properties of functions and relations, including surjectivity, injectivity, bijectivity.
5. know the definition of cardinality, and be able to determine if a set is finite, countably infinite, or uncountably infinite.
6. be able to effectively communicate written mathematics.

Grading and Evaluation: Evaluation will be done by several means. There will be three in-class tests (*tentative* dates are Jan 31, Feb 26, and Mar 9); graded homework assignments (including WTL) and quizzes, which will be averaged together; a WAC paper; and a final exam. They count as follows:

Tests:	55%
Assignments & Quizzes:	15%
WAC Paper:	5%
Final Exam:	25%

A letter grade will be assigned according to the following:

90-100: A 80-89: B 70-79: C 60-69: D 0-59: F

Final Exam: The final exam is on Monday April 30, 11:00AM-1:00PM. It will be comprehensive.

Make-ups: In order to take a make-up test or quiz, you must have a valid reason for missing it, contact me as soon as possible, and (except in extreme situations) take the make-up on or before the day of the next class. Unexcused late assignments will be penalized 10% per class day, and will not be accepted one week after the due date.

Homework: Homework problems will be assigned from each section. Some homework will be only for practice; some will be graded. It will be clear which is which.

Academic Dishonesty: Any student caught cheating will receive a failing grade and may be reported to the Office of Student Affairs. Cheating includes using unauthorized materials during a test, giving or receiving information during a test (including copying), giving information about a test to a student who will take it at a later time, and receiving information about a test before you take it.

Important Dates:

Last Day to Drop: January 10
MLK Day: January 15
Last Day to Withdraw: March 1
Spring Break: March 19-24
Final Exam: Monday April 30, 11:00AM-1:00PM

WAC Requirements:

A W designation after a section number of a 3000- or 4000-level course signifies that the course is a Writing Across the Curriculum (WAC) course. WAC accepts as a guiding principle the idea that writing is a valuable tool for learning and communication. Therefore, the writing components of a course so designated are designed to help you learn the material and communicate what you have learned. Students are required to take two W courses for an undergraduate degree in the College of Arts and Sciences.

Writing to Learn (WTL):

1. **Recording Journals.** You will be required to keep a journal detailing the materials that are presented in the lectures. Your journal should include definitions and the statements of all theorems that are presented in class. You should also include proofs to theorems that are presented in the lectures.
2. **Group Brainstorming.** The language of logic and set theory is very useful for describing real-world situations. You will be divided into groups and given a particular situation. You will then brainstorm to find ways that the situation can be described using formal logic.
3. **Writing Assignments.** You will be assigned some problems to work out and turn in. These problems will consist mostly of proofs, which must be written in an accurate and detailed manner. They will be graded on correctness as well as grammar and presentation.

Writing to Communicate:

Many of the words and concepts used in symbolic logic are also used much more loosely in general conversation. (For example, people often use the word “if” when describing a situation that where they really mean “if and only if”.) You will write a 3-5 page paper examining such differences in usage between formal mathematical language and informal English. Your paper should include examples of at least five words or phrases that are used differently. (You should use the if/iff example as one of your five.) For each, you should describe in detail how the words are used in English and how they are used in mathematics. For each, you should either find or make up some examples, and tell whether you think that the looser usage can lead to ambiguity or confusion in conversation.

The following three things are due:

1. List of your five words or phrases, due Monday March 4.
2. Rough Draft due Monday April 2
3. Final Draft due Monday April 16