

MATH 358
FOUNDATIONS OF MATHEMATICS
Nicholls State University, Fall 2008

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My office hours are 9:00 am – 12:00 pm M, W, F, 4:00 – 5:00 pm W, and 4:00 – 6:00 pm TH. Please contact me (phone, email, or in person) during these times if you have any questions. If you need assistance at a different time, let me know and we'll work something out.

Prerequisite: Math 166

Text: Foundations of Higher Mathematics (3rd ed.) by Fletcher & Patty (Brooks Cole)

Course Description (catalog): Logic, sets, methods of mathematical proofs, relations, functions, mappings, ordered fields and their properties, axiomatization of number systems.

Course Description (instructor): There is a pretty stark contrast between lower-level mathematics course (like algebra, trigonometry, and calculus) and upper-level courses (like analysis, abstract algebra, and topology). In the lower levels, we spend a lot of time covering techniques, algorithms, and methods of solving various problems. There is not a great deal of attention paid to theorems and the reasoning behind these methods. As you enter the upper level courses, the focus turns to the motivations behind the methods, why they work, and how to prove that theorems are true. It's a pretty large difference in philosophy...and this course is the bridge.

We will occasionally focus on mathematical objects - such as sets and functions - which are fundamental to all areas of mathematics, but the main goal of this course is to teach you how to prove things mathematically. Specifically, we will cover most of Chapters 1-4 of our text and then selected sections from Chapter 5.

For those students who are enrolled in the web-version of this course, a few words need to be said about the Internet aspect. All assignments, notes, and announcements will be posted on Blackboard. All students enrolled in an Internet course should have basic computer skills (such word processing, e-mail, navigating the Internet, etc). Some tips on preparing yourself for an online course are available at www.nicholls.edu/distance. As an

online student, you will be somewhat self-paced. This therefore requires self-discipline and self-motivation. The problem sets need to be turned in on time. It is the responsibility of the student to notify the instructor of technical and/or personal problems that may interfere with online participation. All students must check their e-mail account regularly. E-mail will be our primary means of communication. If you need more personalized assistance, I invite you to contact me (either in person or on the phone) during office hours. Just like a typical class, instances of academic dishonesty, such as plagiarism, will not be tolerated.

Student Learning Outcomes: A student who completes this course will be able to:

- Express statements in logical symbolism, including compound statements, negations, quantified statements, and conditional statements.
- Prove theorems using a variety of theorem-proving methods, including mathematical induction.
- Solve problems in set theory.
- Solve problems in elementary number theory.
- Determine the functionality of relations.
- Explain the difference between countably infinite and uncountably infinite sets.
- State important theorems/axioms such as the Well-Ordering Principle and the Axiom of Choice.

Grading Policy: We will have two exams (a mid-term and a final) and several problem sets throughout the semester. Both exams will be comprehensive and neither is optional. One or both of the exams *might* be take-home. Both components (problem sets and exams) will count for 50% of your course grade. At the conclusion of the semester, I will assign letter grades based on the usual 10% grading scale (A: 90-100%, B: 80-89%, C: 70-79%, etc). I will not accept late problem sets unless there are VERY unusual circumstances, and make-up exams will only be administered if the student provides a valid excuse. The instructor decides which excuses are valid. Academic dishonesty (i.e. cheating, plagiarism, etc.) will not be tolerated. Sanctions for such behavior are outlined in the *Code of Student Conduct* (Section 1.9).

General Education Testing: Taking the M.A.P.P. General Education Competency Exam is a requirement for completing this course. Test results are used solely for program evaluation, and student cooperation is required.

- Testing dates for this semester are Monday, November 3, 2008 and Tuesday, November 4, 2008. There will be a make-up day on Tuesday, November 11, 2008.

- The test will take approximately 50 minutes. Tests will be administered in Peltier Auditorium and will run from 7:30 am to 6:30 pm (the last test begins at 5:20 on Monday and 5:30 on Tuesdays).
- Students must present picture identification and must sign in at the test site (lobby of Peltier Auditorium).
- Non-graphing calculators are allowed.
- Students are not to miss class to take the Gen. Ed test.
- ***Students who do not take the Gen. Ed. test will be given an 'I' in this class.*** (University policy).
- Students who have taken the test before do not need to take it again. Please see me if you have taken the Gen. Ed. test in another class so that your participation can be validated for this requirement.

Attendance: I will not include attendance as part of your course grade. I am not your mother or your parole officer, and this is not high school. I do, however, expect you to attend class everyday. You are responsible for all material covered in class.

Important Dates: Mid-Term Exam – Thursday, October 2, 2008
 ‘W’ Day – Friday, October 24, 2008
 Final Exam – Thursday, December 4, 2008

Academic Grievances: The proper procedure for filing grade appeals or grievances related to academic matters is listed in Section 5 of the *Code of Student Conduct* and at the following link: http://www.nicholls.edu/documents/student_life/code_of_conduct.pdf.

Continued Learning following an Extreme Emergency: In order to make continued learning possible following an extreme emergency,

students are responsible for:

- reading regular emergency notifications on the NSU website;
- knowing how to use and access Blackboard (or university designated electronic delivery system);
- being familiar with emergency guidelines;
- evacuating textbooks and other course materials;
- knowing their Blackboard (or designated system) student login and password;
- contacting faculty regarding their intentions for completing the course.

faculty are responsible for:

- their development in the use of the Blackboard (or designated) software;
- having a plan for continuing their courses using only Blackboard and email;
- continuing their course in whatever way suits the completion of the course best, and being creative in the continuation of these courses;

- making adjustments or compensations to a student's progress in special programs with labs, clinical sequences or the like only in the immediate semester following the emergency.

Disability: If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in Peltier Hall, Room 100-A. The phone number is (985) 448-4430 (TDD 449-7002).