MATH 465
MODERN ALGEBRA I

Nicholls State University, Spring 2006

Instructor: Brian Heck. My office is 106-E Peltier Hall and my office phone number is 448-4383. My office hours are 9:30-11:45 Mon, Wed, 9:00-12:00 Tue, Thurs, and 5:00-6:00pm Wed. Please come by if you have any questions. Also, my email is brian.heck@nicholls.edu.

If I am not in my office during my scheduled office hours, then I am wandering the halls of Peltier. Please hang around or come and find me. If for some reason I will be unable to hold office hours, I will put a note on my door.

Prerequisite/Text: Completion of Math 358 and Math 360. Our required text is *Elements of Modern Algebra* by Gilbert & Gilbert (6^{th} ed.)

Course Description (catalog): Introductory concepts, axiomatic approach to the number system, general algebraic systems, groups.

Course Objectives: At the completion of this course, a student will be able to:

- demonstrate a thorough understanding of the fundamental concepts of sets, mappings, relations, and groups
- prove propositions about the integers using given postulates and mathematical induction
- analyze mappings for injectivity and surjectivity
- determine properties of binary operations
- determine if relations are equivalence relations
- apply the division algorithm
- solve linear congruences
- perform modular arithmetic
- determine whether subsets of groups are subgroups
- find generators of cyclic groups
- prove propositions about groups and isomorphisms
- perform operations in the permutations groups

Grading Policy: There will be four equally weighted components to your course grade: board work, problem sets, midterm exam, and final exam.

Board Work: Every night, a portion of class time will be set aside for student presentations of homework problems. Each presentation will be graded, but more importantly over the course of the semester, you will also be graded on

how many problems you present. This portion of your grade will therefore be based on quality *and* quantity.

Problem Sets: Several times throughout the semester (maybe 4-7 times) I will assign additional problems that will be turned in the next week. These will often be just like the other homework problems, but will usually include one or two "outside-the-box" problems.

Exams: We will have an in-class midterm exam and a take-home final.

Approximate Class Schedule: Below is a list of the sections we will cover this semester. If time allows, more sections may be added. If time does not allow, some sections may be skipped. The tentative dates of our four exams are included. I do not expect the dates to change, but if they do, you will be notified in class.

Chapter 1: Sections 1-7
Chapter 2: Section 1-8
****Midterm Exam…Wednesday, March 15****

Chapter 3: Sections 1-5
Chapter 4: Sections 1-7
****Final Exam…Wednesday, May 10****

Attendance/Expectations: I will not include attendance as part of your course grade. I do, however, expect you to attend class everyday. You are responsible for all material covered in class. It is assumed that you are attending this university because you have a desire for higher learning. It is therefore expected that you will pay attention, be respectful of your instructor and fellow students, and follow the Code of Student Conduct. Instances of academic dishonesty will be dealt with severely. If you are caught cheating, you will fail this course. Similarly, if you are a disruptive presence in the classroom, you will be dropped from the class.

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).