

# MATH 471/590

## ELEMENTARY TOPOLOGY

Nicholls State University, Fall 2003

**Instructor:** Brian Heck. My office is 117-A Peltier Hall and my office phone number is 448-4383 (4383 on campus). I will set office hours the first week of class and announce them in class. However, I am also available by appointment. Please drop by if you have any questions. Also, my email is math-bh@nicholls.edu.

**Prerequisite/Text:** Completion of Math 360. There is no required text.

**Course Description (catalog):** An information [sic] and introductory study of topological spaces.

**Course Description (instructor):** Our goal is the study of topological spaces. These are very common in mathematics, and in fact you have dealt with them your whole career, even if you did not know it. To do this, though, we will need to study a variety of preliminary topics first such as set theory, relations and functions, countable (and uncountable) sets, and the axiom of choice. With these basics in hand, we will tackle confidently topological spaces. We will learn many examples, and certain types of topological spaces such as metric spaces, product spaces, and quotient spaces. Then we will move on to limit points, homeomorphisms, connectedness, and compactness. Then, as time allows, we will hit the Countability Axioms and the Separation Axioms. Fun, fun, fun.

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

- describe open sets in a variety of topological spaces
- determine whether a collection of sets is a topology
- demonstrate an understanding of limit points and neighborhoods
- analyze topological spaces and subspaces for connectedness and compactness

**Grading Policy:** You will have four (4) equally weighted components to your grade; board work, problem sets, midterm exam, final exam. The class notes I will pass out will contain numerous problems. These are to be worked out and the solutions presented at the board in class. Over the course of the semester, you will be graded on quantity (how many problems you present) *and* quality (how well you present them). Additionally, every week or two, I will assign a set of similar

problems for you to do outside of class and turn in. The two exams (a midterm and a final) will each be closed notes and comprehensive.

Finally, students taking the course for graduate credit will have an additional topic assigned to them to be researched and presented to class around thanksgiving. Come see me as early as possible for your topic.

**Attendance/Expectations:** 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. 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:** The following statement is required to be on all syllabi.

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).