# MATH 485/589/590
# COMPLEX ANALYSIS

Nicholls State University, Spring 2004

**Instructor**: Brian Heck. My office is 117-A Peltier Hall and my office phone number is 448-4383. My office hours are as follows: Monday, Wednesday 4-6 p.m., and Tuesday, Thursday 9-11:30 a.m. and 1:30-3 p.m. Please come by if you have any questions. Also, my email is Brian.Heck@nicholls.edu.

**Prerequisite/Text**: Completion of Math 355 and Math 358. Our required text is *A First Course in Complex Analysis with Applications* by Zill and Shanahan (1st ed.).

**Course Description (catalog)**: Complex numbers, analytic functions, elementary functions, mapping by elementary functions, integrals, power series.

**Course Description (instructor)**: Essentially, this course comprises calculus done in the complex setting instead of over the real numbers. There will be many similarities to real calculus, but also many more important differences. We will start with complex numbers and functions, and then explore limits, continuity, derivatives, integrals, and power series, all familiar real calculus topics. We will occasionally focus on applications along the way. Finally, *students taking the course for graduate credit* will have an additional topic assigned to them to be researched and presented to class at the end of the semester. I will assign those topics sometime during the first half of the semester.

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

- perform arithmetic operations on complex numbers
- demonstrate an understanding of the complex plane
- convert complex numbers into polar form and extract roots
- clearly describe regions in the complex plane described by a given equation or inequality
- demonstrate an understanding of complex functions
- analyze special complex functions (power functions, reciprocal function, exponential function, logarithmic function) and describe their domains and graphs

**Grading Policy**: You will have four (4) equally weighted components to your grade; board work, problem sets, midterm exam, final exam. The two exams will each be closed notes and comprehensive.

**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).