MATH 410: Introduction to Analysis

Course Description: This course is the first half of a year long course in the theory of functions on the real line. We begin with the axiom of completeness and equivalent statements. Most of the first semester will be spent on a careful examination of sequences, series, and their applications to differentiation. This will produce results about real functions that incorporate and transcend the theorems of calculus. We will also set the stage for generalization of analytical techniques to spaces other than $\mathbb{R}$. A central methodological theme will be the development of mathematical intuition and proof-writing, by exercising these abilities in unfamiliar contexts.

Text: *Understanding Analysis*, by Stephen Abbott, Springer-Verlag, 2000. *Principles of Mathematical Analysis*, by Walter Rudin, is also recommended for students hoping to pursue graduate study in mathematics.

Class Meetings: MWF 9:05-9:55, in Roop 105.

Instructor: E.Θ Brown, PhD., brownet at math.jmu.edu

Office Hours: M 8:30-9AM, W 8:30-9AM, Th 5-6:15PM, F 8:30-9AM and 3:30-4:30PM; also by appointment.

Prerequisites: Math 237 and at least one of Math 245, 310, 312, 315, or equivalent coursework, or consent of the instructor.

Course web site: The web site www.math.jmu.edu/∼brownet/410 contains a copy of the syllabus, as well as an assignments and outline page. Various other links of interest will be posted there as we find them throughout the term.

Assignments: Reading and homework problems will be assigned in class, and posted on the assignments section of the course web site (see above). Reading assignments should be completed before the next class meeting. Problems will be presented by students in class on Mondays; please come to class ready to present the homework. If we do not discuss a problem in class, or you would like written feedback about your solution to a problem, I will read and comment on your homework. Exams will be given in class on September 18 and October 30. Take-home exams will be distributed in class on October 9 and November 20; these will be due on October 16 and December 2, respectively. Late problems sets are in general not accepted.

Shenandoah Undergraduate Mathematics and Statistics (SUMS) Conference: Every student is required to attend and give a poster at the SUMS conference, which will be held at JMU on October 3 (a Saturday). Information and registration is on the conference web site, http://www.math.jmu.edu/SUMS

Grading: Semester grades will be based on classwork, exams, and the final. Missed exams will be made up only in cases of what I construe to be legitimate, documented, emergency. Classroom participation may affect a grade by up to 10% in either direction. (In other words, asking good questions will help your grade. Boorish behaviour that interferes with other students' learning will hurt it.)

Honor Code: Students are expected to observe the JMU academic conduct code. Violation of the honor code is in essence theft from other students, and will be treated with corresponding gravity. In this course, students are encouraged to discuss problems with each other, but never to copy. All work on exams must be individual.

Special Circumstances: Any student who requires special arrangements because of a physical, mental, psychiatric or religious condition should speak with me during the first week of class. Our conversation will be confidential, except for communication I need to have with Student Services. Please also see me if relevant new circumstances arise during the term.