Math 311/611: Real Analysis
Syllabus, Fall 2011

Professor: **Dr. Jason Parsley**
Office: 330 Manchester Hall
Office hours: MW 3:15-4, W 12-1, Th 2:30-3:30 (preference to 311), Th 3:30-4:30 (preference to 107); and also by appointment
Email: `parslerj AT wfu.edu`

1. Course Time & Location: MWF 1-2, Manchester 024

2. Text: *Elementary Analysis: the Theory of Calculus*, by Kenneth A. Ross.

3. Course Material: We will cover chapters 1-4, plus selected topics from chapters 5-6.

4. Homework: Working problems, both individually and together, is fundamentally important in learning mathematics well. The written homework should be neatly written using proper English grammar. Written assignments will be due on **Fridays** at the start of class. Late work is simply not accepted, sorry. I'm willing to work with you – if there are unusual circumstances which will not allow you to submit homework on time, let me know and we can work something out.

Each Friday, I will collect 1-3 problems from you to grade. I suggest that you keep a three ring binder with all of your written solutions so that when I ask for homework you can simply pull the appropriate page(s) out of your binder. I anticipate that most graded problems are worth 5 points; I will average your homework scores and scale out of 150 points total.

Academic integrity is something I take quite seriously. Here are my expectations: you may (and probably should) discuss course material freely with each other. The written assignments that you submit must be your original work, i.e., when writing your solutions, you should be working independently, not together.

5. Typed solutions. We will be collaborating as a class to produce a full set of typed solutions to the ungraded homework problems. Here's how it will work: I will assign on Fridays a pair of graduate students as 'authors' to each ungraded homework problem. The two of you will together write, in LaTex, a full and correct solution to the problem and post it on Sakai by the following Monday (by midnight). You should post both the LaTex (`.tex`) file and the resulting `.pdf` file.

You may talk to anyone in the class, including me, about how to do your problem. (Of course, you should have already figured it out.)

The rest of you are in charge of determining if the problem is correct or not. You can post comments or questions, or even edit the `.tex` file yourself. The authors should respond. Repeat until perfect, and finish by the following Friday. Here's how the scoring goes:

- if there's an egregious error and no one questions it, **everyone** loses 2 points off their final homework grade (scaled to be out of 150 points)
- the authors are graded on the final copy of the problem like any other

Undergraduates may volunteer to be authors, but this is completely optional.

6. Exams: We will have two midterm exams and one final exam. Each of these will have an in-class and a take-home component.

- 1st midterm: F., Sept. 30; take-home due M., Oct. 3
- 2nd midterm: F., Nov. 4; take-home due M., Nov. 7
- Final exam will be F., Dec. 16, 2-5pm.

7. Projects. Projects are intended for all graduate students and for any undergraduates who are willing to take on a significant challenge. Choose one of the following famous theorems and become an expert on its statement, its proof, and its meaning. You may suggest your own topic, subject to my approval. Be prepared to demonstrate your expertise at the chalkboard in my office before the end of the semester. And LaTex a copy of the theorem,

Each project is worth 50 points. You may do more than one project if you like, subject to my approval. Graduate students are required to do at least one project. For undergraduates the projects are optional. Topics:

a) Arzela-Ascoli Theorem
b) The Contraction Mapping Theorem
c) Existence and Uniqueness Theorem for ODE's
d) Weierstrass Approximation Theorem
e) Sard's Theorem
f) The Inverse Function Theorem
g) Stokes' Theorem (multivariable calc. version [or differential forms version], proven rigorously)

Please consult with me before choosing a topic. Some of the suggestions above require significant ideas from other classes, such as multivariable calculus.

8. Grade Calculation:

Homework	150 pts
Midterm Exam 1	100 pts
Midterm Exam 2	100 pts
Final Exam	200 pts
Projects	50 pts each
Total	$550 + 50n$

If you have a disability which may require an accomodation for taking this course, please contact the Learning Assistance Center (758 5929), then contact me, within the first 2 weeks of the semester.