Mathematics 527 – SPRING 2017
REAL ANALYSIS
CRN # 23292 – MTRF 11:00–11:50 – Room BH 201

Instructor: Arpad Benyi, Professor
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URL: http://faculty.wwu.edu/benyia/teachingspring2017.html
Office Hours: MTF 10:00–10:50,
and by appointment.

Textbook: Lecture notes for Math 527 (see website for pdf file)

Prerequisites: Math 522

Student Learning Objectives

The main goal of the course is to introduce the fundamentals of measure theory and Lebesgue integration. Being enrolled in this course assumes that you are familiar with basic facts about set theory, cardinality, the set of real numbers, the Riemann integral, sequences and series of functions (modes of convergence, etc), metric spaces, compact sets and continuous maps. This is a fast paced course that will cover a lot of material. The main topics we will address are:

• Abstract measure theory; Lebesgue measure
• Abstract integration; Lebesgue integral
• Differentiation of integral and absolute continuity
• Basic elements of functional analysis; linear functionals
• $L^p$ theory; duality and basic inequalities

Written Assignments and Exams

There will be 3 or 4 written assignments, handed out one week before they are due. The assignments will be posted online. You are expected to turn in individual solutions. While it is ok to discuss the assigned problems with your classmates, the majority of the work and write-up should be done individually. You are on your honor to follow this rule.

There will also be 3 exams: two in-class midterms (Fridays, April 21 and May 19) and a comprehensive take-home final (due Friday, June 9, by 12 PM).

I expect your assignments and exams to be written up in a neat and concise manner. Consider typing your assignments if you are not confident about the legibility of your writing. I do not accept late assignments, unless you have a very serious reason for missing a due date.
If some health or family emergency would prevent you from missing an exam, you should contact me before the exam and I will make alternate arrangements. Once you take an exam, the score is recorded and cannot be adjusted or replaced under any circumstances.

Classes

You are expected to attend regularly the lectures. Certain calculations and parts of proofs presented in class will be regularly left as exercises. You should try to fill in the details on your own since this routine will only add to your deeper understanding of a given topic. You should, of course, refer to the posted lecture notes for additional feedback. Do not hesitate to ask me for help if you ever feel completely lost.

All electronic gadgets that make a sound should be turned off during class!

Grading

The written assignments will count for 60%, the midterms 10% each and the final exam 20% of your total score. Letter grades will be assigned according to the following scale:
A (90–100), A- (85–89), B+ (80–84), B (75–79), B- (70–74), C+ (65–69), C (60–64), C- (55–59), D (50–54), F (0–49).

Incomplete Grades/Academic Dishonesty

University guidelines as found in the Bulletin will be followed.