

Washington University - St. Louis
Fall 2016

Math 5051 - Measure Theory and Functional Analysis I
Lecture: Room: Cupples I, Room 207 - Time: MWF 3:00pm – 4:00pm

Instructor: Brett D. Wick Office: Cupples I 212
Office Phone: 314-935-6765 Office Hours: MWF 9:00am – 10:00am
Email: wick@math.wustl.edu or by appointment
Webpage: http://www.math.wustl.edu/~wick/teaching/math5051_F2016.html

Text: The assigned text for the course will be:

Title: “Measure and Integral: An Introduction to Real Analysis”

Authors: Richard Wheeden and Antoni Zygmund

Publisher: Chapman & Hall/CRC Pure and Applied Mathematics

Prerequisite and Description: Math 5051 is an introduction to graduate real analysis and serves as the basis for the Ph.D. qualifying exam in analysis. Topics covered include: measures, sigma-algebras, outer measures (on abstract measure spaces), Borel measures on \mathbb{R}^n ; integration, measurable functions, integrals, monotone convergence theorem, Fatou’s lemma, dominated convergence theorem, Fubini’s theorem (on abstract spaces), Lebesgue integral on \mathbb{R}^n ; decomposition and differentiation of measures, signed measures, Lebesgue-Radon-Nikodym theorem, functions of bounded variation. Basic ideas of functional analysis will also be covered.

Prerequisites for the course are Math 4111, 4171, and 4181, or permission of the instructor.

Attendance: Attendance is required for all lectures. The student who misses a class meeting is responsible for any assignments and/or announcements made. Office hours will not be utilized to re-teach material presented in class. However, questions to better understand the course are always welcome.

In the event of an absence that will impact your ability to complete your assignments due to travel representing Washington University - St. Louis, you must notify the professor at least two weeks in advance to arrange an early test or other alternative. Otherwise, such absences will be treated as personal.

Homework: This course will have daily homework assignments which should be done before the next class. Homework will be collected and graded.

Exams: This course will have two mid-term exams and a comprehensive final exam. The mid-term exams will be take home, while the final exam will be in class. The exams for the course will take place on:

Exam Dates:

Exam 1 September 30 (tentative)
Exam 2 November 4 (tentative)
Final Exam Thursday, December 15 6:00pm - 8:00pm

Learning Disabilities: It is the right of any student with a certified learning disability to request necessary accommodation. Such requests must be made well in advance of the time that the accommodation is required and a letter of documentation from the **CornerStone** office must be presented at the time of any request.

Academic Honesty: It is expected that all students are aware of their individual responsibilities under the **WUSTL Academic Integrity Policy**, which will be strictly adhered to in this class. **Any violations must be reported directly to the Dean of Students.**

Grades: The usual ten-point scale will be used (A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: 0-59), however, if necessary, adjustments will be made to arrive at a standard grade distribution. Grades will be based upon attendance, participation, homework, and exams.

Attendance/Participation	10%
Homework	20%
Midterm Exam	40%
Final Exam	30%

Important Dates for Fall 2016:

August 29 First day of classes
September 5 Labor Day - No Class
October 15 - 18 Fall Student Recess - No Class
November 23 - 27 Thanksgiving Break - No Class
December 9 Last day of classes