MATH-GA.1420 – Introduction to Math Analysis II

NYU, Spring 2021
Lectures: Wednesdays, 8:00pm – 9:50pm EST [online]
Recitations: Thursdays, 8:00pm – 9:50pm EST [WWH 517 / online]

Instructor: Samuel Boury (sb7918@nyu.edu)

Recitation leader: Jumageldi Charyyev (jc7518@nyu.edu)

Office hours: Mondays, 8:00pm – 9:50pm EST [online]

Lectures: Classes will be on Wednesdays, 8:00pm to 9:50pm, and will be held online only. Attendance is mandatory and classes will not be recorded. If you are unable to attend a session for any reason, please let me know as soon as you can.

Textbook: Lectures given in class as well as lectures notes should be self-sufficient. However, the course is partly based on the book *Lebesgue Integration on Euclidean Space* (Frank Jones) that can help you delve further into the notions discussed in class.

Overview: The course will cover the basics of Lebesgue measure and integrability for real valued functions.

Homework: Homework problems will be assigned weekly. Mandatory exercises will be due on Wednesdays.

Exams: A midterm exam will be held in class on March 24. The final exam will be held on May 12. Students must attend both exams. Make-up exams will not be given, except for emergencies.

Grades: Grades will be based on the homework (20%), midterm exam (30%), and final exam (50%).

Schedule of the course:

Date	Lecture	Overview
Feb 3	Lecture 1	Introduction to $\mathbb{R}^n$ and elements of topology
Feb 10	Lecture 2	Lebesgue measure on $\mathbb{R}^n$ (1/2)
Feb 17	Lecture 3	Lebesgue measure on $\mathbb{R}^n$ (2/2)
Feb 24	Lecture 4	Measurable sets and functions
Mar 3	Lecture 5	Integration (1/2)
Mar 10	Lecture 6	Integration (2/2)
Mar 17	Lecture 7	Integration and functions of 2 variables (1/2)
Mar 24	**Midterm exam**	
Mar 31	Lecture 8	Integration and functions of 2 variables (2/2)
Apr 7	Lecture 9	$\mathcal{L}^p$ spaces (1/2)
Apr 14	Lecture 10	$\mathcal{L}^p$ spaces (2/2)
Apr 21	Lecture 11	Convolutions & Differentiation
Apr 28	Lecture 12	Fourier series and Fourier transform
May 5	**Final exam**	