MATH 745: Analysis II
Spring 2019 Graduate Course Syllabus

COURSE INFORMATION

Course Description: This is the second part of the two-semester course that introduces an application-minded student to foundations and modern techniques of real analysis. Topics covered in this course are various function spaces, Fourier transform, distributions, Sobolev spaces and applications to partial differential equations and eigenvalue problems.

Number of Credits: 3

Prerequisites: Math 645 or departmental approval.

Course-Section and Instructors

Course-Section	Instructor
Math 745-002	Professor Y. Boubendir

Office Hours for All Math Instructors: Spring 2019 Office Hours and Emails

Required Textbooks:

Title	*Analysis*
Author	E. H. Lieb and M. Loss
Edition	2nd
Publisher	AMS
ISBN #	978-0821827833

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, April 8, 2019**. It will be strictly enforced.

OTHER READING

- E. H. Lieb and M. Loss, *Analysis*, 2nd edition, AMS, 2001
- J. K. Hunter and B. Nachtergaele, *Applied Analysis*, World Scientific, 2001

- H. L. Royden and P. M. Fitzpatrick, *Real Analysis,* Fourth Edition, Pearson
- N. V. Kolmogorov and S. V. Fomin, *Introductory Real Analysis,* Dover
- W. Rudin, *Real and Complex Analysis,* 3rd edition, McGraw-Hill

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Homework	30%
Midterm Exam	30%
Final Exam	40%

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the Math Department's Attendance Policy. This policy will be strictly enforced.

Homework Policy: Homework will be assigned during class times and collected every couple of weeks. Selected problems will be graded.

Exams: There will be one midterm exam held in class during the semester and one comprehensive final exam. Exams are held on the following days:

Midterm Exam	March 26, 2019
Final Exam Period	May 10 - 16, 2019

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the Math Department's Examination Policy. This policy will be strictly enforced.

Makeup Exam Policy: To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

- http://math.njit.edu/students/policies_exam.php

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Accommodation of Disabilities: Disability Support Services (DSS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall, Room 260. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- http://www5.njit.edu/studentsuccess/disability-support-services/

Important Dates (See: Spring 2019 Academic Calendar, Registrar)

Date	Day	Event
January 22, 2019	T	First Day of Classes
February 1, 2019	F	Last Day to Add/Drop Classes
March 17 - 24, 2019	Su - Su	Spring Recess - No Classes, NJIT Open
April 8, 2019	M	Last Day to Withdraw
April 19, 2019	F	Good Friday - No Classes, NJIT Closed
May 7, 2019	T	Friday Classes Meet/ Last Day of Classes
May 8 & 9, 2019	W & R	Reading Days
May 10 - 16, 2019	F - R	Final Exam Period

Course Outline

Week	Topic
Week 1	Metric, Banach and Hilbert spaces
Weeks 2-3	Fourier series and Fourier transform
Weeks 4-8	Distributions
MIDTERM	03/26/19
Weeks 9-12	Sobolev spaces
Weeks 13-14	Applications to eigenvalue problems