

MATH 6321, THEORY OF FUNCTIONS OF A REAL VARIABLE- PART II.

Course times: Lecture times are as follows:

- Monday 1.00pm-2.30pm, F 154
- Wednesday 1.00pm-2.30pm, F 154

Office hours: Online 2 hours a week at times to be determined at first class meeting.

Contact Details: Dr Matthew Nicol , Office PGH Room 210, Extn: 6181

Course Description: Emphasis will be placed on a thorough understanding of the basic concepts of modern analysis as well as developing problem solving skills in applications. Topics covered include: Hilbert spaces; Banach spaces; elements of functional analysis; Fourier series and transforms; and elements of distribution theory. These notions will be examined through examples and applications, especially to probability, ergodic theory and physics.

Recommended Texts:

- Real Analysis: Modern Techniques and Their Applications by Gerald B. Folland (2nd Edition).
- Real Analysis for Graduate Students, 2nd Edition, by Richard F. Bass (the book is available on his website).
- Real and Complex Analysis by Walter Rudin (any edition).
- Functional Analysis 1 by Michael Reed and Barry Simon.
- Measure, Integration and Real Analysis by Sheldon Axler.
- Real Analysis: Measure Theory, Integration and Hilbert Spaces by Elias Stein and Rami Shakarchi.
- Probability: Theory and Examples by Richard Durrett (any edition).
- Principles of Real Analysis, any edition, by Walter Rudin. This is a good book to review for course background and assumed knowledge.

Lecture notes will be comprehensive and the books listed above are for reference. The book by Richard Bass will be available as a pdf file. The course assumes an understanding of analysis at the level of Principles of Real Analysis (any edition) by Walter Rudin and a knowledge of measure theory.

Assessment:

There will be one midterm (worth 30%), a final exam (40 %), as well as approximately 4 take-home problem sheets (30% for the total of all problem sheets). Not all the questions on the take-home problem sheets will be graded- a subsection of the

questions will be randomly chosen and graded. The grade on the take-home problem sheet will be based on this graded subsection.

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad or hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713- 743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the “Lets talk” program, a drop in consultation service at convenient locations and hours around campus CAPS

Face Covering Policy To reduce the spread of COVID-19, the University strongly encourages everyone (vaccinated or not) to wear face coverings indoors on campus including classrooms for both faculty and students.

Presence in Class

Your presence in class each session means that you:

- Are NOT exhibiting any Coronavirus Symptoms that makes you think that you may have COVID-19
- Have NOT tested positive or been diagnosed for COVID-19
- Have NOT knowingly been exposed to someone with COVID-19 or suspected COVID-19

If you are experiencing any COVID-19 symptoms that are not clearly related to a pre-existing medical condition, do not come to class. Please see Student Protocols for what to do if you experience symptoms and Potential Exposure to Coronavirus for what to do if you have potentially been exposed to COVID-19. Consult the (select: Undergraduate Excused Absence Policy or Graduate Excused Absence Policy for information regarding excused absences due to medical reasons.

COVID-19 Information Students are encouraged to visit the University's COVID-19 website for important information including on-campus testing, vaccines, diagnosis and symptom protocols, campus cleaning and safety practices, report forms, and positive cases on campus. Please check the website throughout the semester for updates.

Vaccinations

Data suggests that vaccination remains the best intervention for reliable protection against COVID-19. Students are asked to familiarize themselves with pertinent vaccine information, consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe

that you have a disability requiring an academic adjustments/auxiliary aid, please contact the Justin Dart Jr. Student Accessibility Center (formerly the Justin Dart, Jr. Center for Students with DisABILITIES).

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Justin Dart, Jr. Student Accessibility Center. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through email.

UH Email

Please check and use your Cougarnet email for communications related to this course. To access this email, login to your Microsoft 365 account with your Cougarnet credentials.