MATH 3333, FALL 2019 INTERMEDIATE ANALYSIS

Class Website: www.math.uh.edu/~tomforde/Math3333F19.html

On the course website you will find the homework as it is assigned, as well as a copy of this syllabus, exam dates, and announcements as they are made.

Course Description

This course is an introduction to Real Analysis, a major branch and cornerstone of modern mathematics. Real Analysis (as opposed to other fields of Analysis) deals with the real numbers and functions between them. We will study the construction and properties of the real numbers, which will rely heavily on the ordering of the reals and notion of "distance" provided by the absolute value. We will also develop the concepts of continuity, differentiability, and integrability for functions on the reals, and establish major results that include the Intermediate Value Theorem, the Extreme Value Theorem, the Mean Value Theorem, and the Fundamental Theorem of Calculus.

Instructor

Dr. Mark Tomforde
Office 601 PGH
www.math.uh.edu/~tomforde

Class Meetings

MWF 11-11:50AM, SEC 203

Prerequisites

Math 3325: Transitions; and
Math 2433: Calculus III

Office Hours

Mon.   1:00PM -- 1:50PM
Wed. 10:00AM -- 10:50AM
Office 601 PGH

I encourage you to come by my office if you have questions, need help with homework problems, or want to talk about the material.

Objectives

Students will learn the basics of Real Analysis and be able to use the techniques of analysis to solve problems and prove results of their own. Great emphasis will be placed on effective writing and communication. Students will also be exposed to the notation, language, and methods used by professional mathematicians.
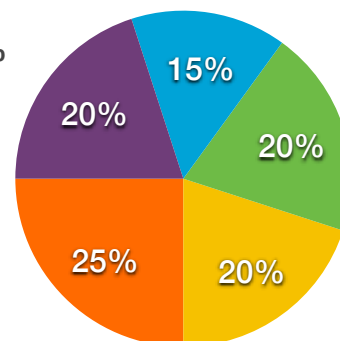
Textbook

Analysis with an Introduction to Proof , 5th Ed., by Steven R. Lay supplemented by notes from instructor

Grading

Your final grade for the class will be determined as follows:

- **Class Participation: 20%**
- **Homework: 15%**
- **Exam 1: 20%**
- **Exam 2: 20%**
- **Final Exam: 25%**

Class Participation

Class participation is based on attendance, how engaged you are in class meetings, and completion of in-class activities. It is vital to attend every class meeting and pay attention, particularly since some lecture material does not appear in the text. Questions on exams will be drawn from homework, reading, and lectures. If you have to miss class for school approved reasons (e.g., school sponsored events, major religious holidays) you need to let me know as soon as possible, and prior to the missed class, for it to not count against your grade. Please keep in mind that class participation is 20% of your final grade, which is significant; a 20% difference in your final score in the class can change your grade by two letter grades or more (e.g., an A- to a C-, or a B+ to a D+).

Homework

Homework problems with due dates will be given on the course web page. Your lowest homework score throughout the term will be dropped when calculating your final grade. This is meant to account for unexpected absences (e.g., illness or getting caught in traffic). Late homework will not be accepted for any reason. You are encouraged to discuss homework problems with others, but the write-up should be done by you alone and in your own words.

Homework Policies

- Homework is due at the beginning of class on its due date. Late homework will not be accepted for any reason. Homework is late once I have started lecturing.

- Homework without a name will not be accepted.

- Homework will not be accepted by email.

- Homework should be written legibly and on only the front side of the paper. Leave enough room for the grader to make comments.

- Homework should be stapled in the upper-left-hand corner.

- Homework should be written on standard-sized paper (8.5" x 11"), with no "fringe" down the side as a result of the paper having been torn out of a spiral notebook

- Homework solutions should be presented in sequential order.

- Homework not picked up within one week of when it is returned will be discarded.

Points will be deducted from homework for each infraction of the above policies.

Writing Proofs

You should think of proofs as writing assignments. When a problem asks you to prove (or show or verify) a proposition, you should write the proof up in "textbook style". This should include a statement of the proposition you are proving, followed by a proof providing a clear and logically correct argument that explains to the reader why the result is true. Throughout the course you will get feedback on your proof writing, as well as see many examples of correctly written proofs in your textbook and in class, but you should be aware at the outset that **at a minimum, your proofs must contain complete sentences, proper spelling and grammar, and correct English usage.**

Exams

There will be two exams and one final. All will be held in our usual classroom.
Exam 1: Friday, September 20 in class.
Exam 2: Friday, October 25 in class.
Final: Monday, December 9, 11AM -- 2PM in our usual classroom.

Makeup Policy

Not being present for an exam or turning in an assignment late results in a score of zero, and you will not be allowed to make up the work. Exceptions may be made in the case of extreme circumstances, such as a documented, serious illness. In the event that you cannot be present to take an exam on the day it is held you need to speak to me in advance and make every attempt to do the work before (and not after) the rest of the class.

Reading Assignments

Reading assignments will be given weekly on the course web page. Completing the reading assignments is just as critical as doing the written homework. **You should read the assigned sections before we cover them in class**, so that you are prepared to answer questions or ask about material you do not understand.

Tutoring

The Math Department offers tutoring for select math courses in the Mathematics Undergraduate Student Lounge (MUSL), located in Fleming Basement, Room 11. The Math Department typically announces a schedule for tutoring during the first few days of class. It should be the case that all MUSL tutors will be able to help you with Math 3333 material.

Honor Principle

University of Houston students are expected to adhere to the Academic Honesty Policy as described in the Student Handbook. In this course this shall mean the following: **Exams shall be worked on independently and without the use of your textbook, homework, or class notes. Homework may be discussed with others, but the write-up must be done on the student's own and in the student's own words, without the help of other people or outside sources. If you are aware of anyone who is cheating or receiving unfair outside assistance, you are honor bound to inform the professor of what is occurring, and you will be considered an accomplice if you do not.** Anyone caught cheating will receive a failing grade in the course and be reported to the department chair and dean for further disciplinary action.

Classroom Environment

As your professor, I hold the fundamental belief that everyone has a right to learn and deserves unrestricted access to education. I also believe that everyone in this class is fully capable of mastering the material. I value diversity, social justice, inclusion, and equality. I am therefore committed to creating a classroom environment that welcomes all students, regardless of race, gender, social class, religious beliefs, etc. If there is anything causing barriers to your inclusion or achievement, please come talk to me. Likewise, any student with a disability or chronic health problem should talk to me about the types of assistance that might be offered.

CAPS Statement

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and 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 "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus. < http://www.uh.edu/caps/outreach/lets_talk.html >

Important Dates

The following are some important dates you should keep in mind:
August 19, First Day of Classes
September 2, Labor Day, No Class
September 4, Official Reporting Day (ORD), Last day to Drop/Withdraw without receiving a grade
September 20, Exam 1 (during class time in our usual classroom)
October 25, Exam 2 (during class time in our usual classroom)
October 31, Last day to Drop/Withdraw with a W grade
November 26, Last Day of Classes
November 27 -- November 30, Thanksgiving Break, No Class
December 9, Final Exam (from 11AM -- 2PM, in our usual classroom)