

# MATH 3333, FALL 2018

## INTERMEDIATE ANALYSIS

**Class Website:** [www.math.uh.edu/~tomforde/Math3333F18.html](http://www.math.uh.edu/~tomforde/Math3333F18.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](http://www.math.uh.edu/~tomforde)

#### Class Meetings

MWF 10-11AM, in CBB 118

#### Prerequisites

Math 3325: Transitions; and  
Math 2433: Calculus III

#### Office Hours

MW 11:00 – 11:50AM  
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.

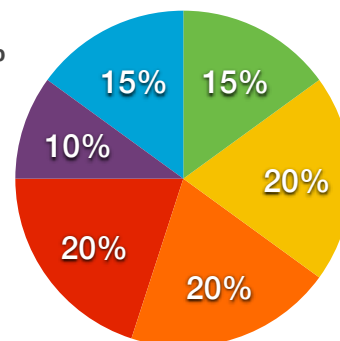
### Textbook

*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: 10%**
- **Homework: 15%**
- **Quizzes: 15%**
- **Exam 1: 20%**
- **Exam 2: 20%**
- **Final Exam: 20%**



## Class Participation

**Class participation is based on attendance and how engaged you are in class meetings.**

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 10% of your final grade, which is significant; a 10% difference in your final score in the class can change your grade by an entire letter grade or more (e.g., an A- to a B-, or a C+ 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. For example, if Section 2.1, Problems #6 and #12 are assigned together with Section 2.2, Problem #2, then your write-up should contain Section 2.1, Problem #6 first; Section 2.1, Problem #12 second; and Section 2.2, Problem #2 third.**
- **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.**

## Quizzes

**There will be five quizzes throughout the semester. Your lowest quiz 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). Missing a quiz will result in a score of zero on that quiz. Make-up quizzes will not be given under any circumstances. Quizzes are to be worked on independently, and without the use of books or notes.

Quiz 1: Friday, August 31

Quiz 2: Friday, September 14

Quiz 3: Friday, October 5

Quiz 4: Friday, October 19

Quiz 5: Friday, November 2

Calculator Policy: Calculators are not allowed during quizzes.

## Exams

**There will be two exams and one final.** All will be held in our usual classroom.

Exam 1: Friday, September 21 in class.

Exam 2: Friday, October 26 in class.

Final: Monday, December 10, 11AM–2PM in our usual classroom.

Calculator Policy: Calculators are not allowed during exams.

## Makeup Policy

**Not being present for an exam or quiz 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. The policy of no late homework applies to students who enroll in the course late; in particular, students who add the course after the first day of classes will not be allowed to turn in homework that was due prior to that point.

## 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.

## Blocks on UH Email and Policy on Missed Emails

Many email providers, including Yahoo, Google, Comcast, AOL / Verizon, and Hotmail have been blocking or filtering emails from uh.edu accounts on and off since last October. This has created problems with communication between students and professors. It is in your best interest to make sure you are receiving emails sent to your uh.edu account. If you are forwarding your uh.edu email to another email address and having difficulty receiving your messages, remember that you can always check your email directly at

<https://email.uh.edu/owa/auth/logon.aspx>

Also, keep in mind that **UH policy states the following:**

“All required written notices from faculty shall be addressed to students via their UH email. Notices properly addressed and so sent shall be presumed to have been received by the students. Thus, students are responsible for the content in emails sent to their UH account, regardless if their external (non-UH) email provider filters or blocks them. Emails lost to external providers shall not be used as a justification to claim faculty are unresponsive, to appeal grades, etc.”

## 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 and Quizzes 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](http://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](http://www.uh.edu/caps/outreach/lets_talk.html) >

## Tutoring

The Math Department offers free tutoring for 3000-level and 4000-level courses in the Mathematics Undergraduate Student Lounge (MUSL), located in Fleming Basement, Room 11. The Math Department will announce a semester schedule for tutoring the first few days of class. A link to tutoring and the tutoring schedule will be placed on the course website.

## Important Dates

The following are some important dates you should keep in mind:

August 20, First Day of Class

August 31, Quiz #1

September 3, Labor Day (No Class)

September 5, Official Reporting Day (ORD), Last day to add or drop without receiving a grade

September 14, Quiz #2

September 21, Exam #1

October 5, Quiz #3

October 19, Quiz #4

October 26, Exam #2

November 1, Last Day to Withdraw with a W

November 2, Quiz #5

November 21-25, Thanksgiving Break (No Class)

November 30, Last Day of Class

Monday, December 10, 11AM--2PM in our usual classroom.