

## MATH 3210-001, Foundations of Analysis I, Fall 2016

**Instructor:** Travis Mandel

**Time:** MWF, 8:05 AM–9:25 AM

**Location:** ST 208 (William Stewart Building)

**Office Hours:** JWB 112, MF 9:35-10:35 and Tuesdays 2-3. Other times by appointment. Subject to change.

**Email:** [mandel@math.utah.edu](mailto:mandel@math.utah.edu)

**Webpage:** <http://www.math.utah.edu/~mandel/teaching/>

**Text:** Joseph L. Taylor, *Foundations of Analysis*, American Mathematical Society, Providence 2012. ISBN-13: 978-0-8218-8984-8, ISBN-10: 0821889842.

See [www.math.utah.edu/schedule/bookInfo/](http://www.math.utah.edu/schedule/bookInfo/) for book info for all math classes. Use the ISBN to make sure you get the right edition (Amazon's paperback version has a different ISBN, so don't get that one).

**Course Information:** Math 3210, Foundations of Analysis I is a 4-credit semester course.

**Prerequisites:** "C" or better in ((MATH 2210 OR MATH 1260 OR MATH 1280 OR MATH 1321 OR MATH 3140) AND (MATH 2200 OR MATH 2270 OR MATH 2250)).

**Course Description:** Logic, methods of proof and mathematical argument in mathematical analysis. Rigorous reconsideration of the real-number system, infinite series and of continuity, differentiation and integration for functions of one variable. The emphasis is on improving the student's ability to understand and explain concepts in a logical and complete manner.

**Topics:** The theory of one variable calculus and the essentials of the professional mathematician: logic, proof and the writing of a mathematical argument. The course covers most or all of the following chapters from the textbook:

Chapter 1: The Real Numbers

Chapter 2: Sequences

Chapter 3: Continuous Functions

Chapter 4: The Derivative

Chapter 5: The Integral

Chapter 6: Infinite Series

**Grading:** The grades (which may or may not be curved) will be calculated as follows:

Weekly Homework 30%

Midterm 20%

Midterm 20%

Final Exam 30%

Your lowest two homework grades can be dropped, or if it better for your grade, you can keep those homeworks grades, have homework count as a higher percentage of your grade, and have a midterm or the final count as a lower percentage. For example, if there end up being 12 homeworks, then each non-dropped assignment will be 3% of your grade. If you keep 11 or 12 assignments instead of dropping 2, then your lowest midterm will count as 14% or 17%, or your final will count as 24% or 27%. The point is that someone who has made 100%'s on the first 10 assignments should still be able to benefit from doing

well on the last 2 assignments.

**Homeworks:** Homeworks will typically be due in class on Wednesdays. I realize that things occasionally come up that may make people late to an 8:05 AM class, so I will allow each person to turn their homework in slightly late 2 times. On these two occasions, your homework must still be turned in by 11:30 AM on the day it is due (or as soon as possible afterwards with an email before 11:30 AM letting me know it's coming and explaining the delay). You should bring it to me in my office, JWB 112, and hand it to me or slide it under my door if I'm not there.

I expect that homeworks will typically consist of about 8 problems, give or take a few. Of these, I will randomly pick about 4 each week to be graded. The problems will be announced in class, via email, and also on my webpage, typically on Monday the week before they are due.

Homeworks (and exams) will mostly consist of proofs. Learning to write clear and rigorous proofs is a major goal of this class. Homeworks may be hand-written or typed (using LaTeX, for example). Full sentences aren't necessary (although actual math papers do always use full sentences), but some connecting words would be helpful (e.g., so, thus, hence, as desired, want to show, because).

Try to avoid phrases like "it is obvious" or "clearly" as they tend to be a sign that what you're claiming is actually not obvious enough for you to be able to explain it rigorously. An example is not a proof. Neither is a purely intuitive explanation.

**Final Exam:** [This website](#) does not include our exact time-slot, but it looks like we should be fine taking the final on Thursday, December 15, 2016, 8:00 - 10:00 am in our usual classroom (ST 208). I will email everyone confirming or changing this time as the final approaches. The final exam is comprehensive, meaning that it covers material from the entire semester, not just the end of it.

## Additional Information

### Additional Policies:

There will be no retakes of exams, for any reason.

You may take an alternate exam **if you talk to me about it first** and explain the emergent, extenuating circumstances that make it necessary. It is 100% your responsibility to communicate with me as soon as is possible, before the exam occurs (or as soon as possible). Talking to me after the problem will be sufficient reason for me to allow you to get a zero on that test. I reserve the right to make alternate exams more difficult than the scheduled exam.

You need to have a valid email address registered with Campus Information System. I will regularly send emails to the class and will hold you accountable for receiving that information.

If you have questions about any exam grade, or you want to appeal the grading of the exam, you must bring it to me within one week of me handing back the exam. I'm happy to look over your appeal and/or questions and give my feedback in order to benefit your learning, but it must be done in this one week time-frame.

If you cheat on any homework or exam, I will automatically give you a zero for that grade. Depending on the severity of the cheating, I may decide to fail you from the class. Please note that the use (or even just pulling it out of your pocket) of a cell phone or any other electronic internet device or calculator during an exam is considered cheating and cause for receiving an automatic zero on any exam. Also,

if you exhibit any other behaviors that are unethical, like offering me a bribe to give you a better grade (even if you later claim you were joking), I will report your behavior to the Dean of Students

I reserve the right to make changes to the syllabus at some point in the semester. If I do make a change, I will announce it in class and via email.

**ADA Statement:** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services (CDS), 162 Olpin Union Building, 581- 5020 (V/TDD). CDS will work with you and me to make arrangements for accommodations. All information in this course can be made available in alternative format with prior notification to CDS.

**Student Responsibilities:** All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. You have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, collusion, fraud, theft, etc. Students should read the Code carefully and know you are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. <http://regulations.utah.edu/academics/6-400.php>