Prerequisites and Course Information

- “C” or better in one of MATH {2210, 1260, 1280, 1321, 3140} and one of MATH {2200, 2270, 2250}.
- MATH 2210, Calculus II, is a 4 credit course.
- The textbook is Foundations of Analysis by Joseph L. Taylor. ISBN 978-0-8218-8984-8. Supplementary textbooks are given below (and are not required).

Course Description

This is the first course of the MATH 3210-3220 sequence on Foundations of Analysis, a sequence designed to develop the mathematical sophistication of students while giving them a much deeper understanding of calculus and its foundations than can be provided in the standard calculus sequence. The emphasis is on improving the student’s ability to understand and explain concepts in a logical and complete manner and refine his/her skill at proofs and mathematical argument. The course begins with a rigorous approach to the real-number system through Peano’s axiomatic definition of the natural numbers and the construction of the real line as a complete ordered field. The theory of one variable calculus is then developed, from convergence, limits and continuity, all the way through differentiation and integration for functions of one variable. The Mean Value Theorem and the Fundamental Theorem of Calculus are proved and applied to problems in the context of real analysis. Some exposure to the topological properties of subsets of the real line is given while studying sequences and functions in one variable.

Topics

The theory of one variable calculus and essentials of the professional mathematician: logic, proof, and the writing of a mathematical argument. The course covers most or all of Chapters 1-6 from
the textbook.

**Additional Resources**

- **Tutoring Center & Computer Lab:** There is free tutoring in the T. Benny Rushing Mathematics Student Center (room 155, the lower level between JWB and LCB), as well as a computer lab. For more information see http://www.math.utah.edu/ugrad/tutoring.html

- **Private Tutoring:** University Tutoring Services, 330 SSB. There is also a list of tutors at the math department office JWB 233.

- **Departmental Videos:** The math department has a full set of lecture videos which you are welcome to use to supplement our course material. These can be found at http://www.math.utah.edu/lectuers/

- **Other references:** *Understanding Analysis* by Stephen Abott is a great book that will explain things slightly differently. *How to Think About Analysis* by Lara Alcock may also help provide intuition. These books are not required, but are also not expensive and may help.

**Course Policy**

I will detail the policy for this course below.

**Grading Policy**

Grading is based on the following evaluation method:

- **20%** of your grade will be determined by your homework scores. Homework will be collected weekly on Friday. The lowest two homework assignments will be dropped. Variable Extra Credit will be given to those students who type their assignments in \LaTeX.

- **10%** of your grade will be determined by *Problem of the Day* style participation questions. At the end of class each day, I will ask a question at the end of the class period. The question is to be answered by the next class period. Credit will be given based on attempting the problem solely, not correctness. The lowest two problems will be dropped (that is, you can miss two days).

- **45%** of your grade will be determined by three 50-minute exams (that’s 15% each). You will have the whole class period to complete the exam. Practice materials will be posted a week prior to each exam.

- **25%** of your grade will be determined by the **cumulative** final exam. Our final exam is Wednesday, May 2, 2018 from 8:00am-10:00am.
Calculators:

Calculators will not be allowed on quizzes or exams. They may be used on homework, but you should still write out the details of your computation for credit. It is in your best interest not to become too dependent on your calculator since they will not be allowed for 80% of your grade (exams and quizzes). I would suggest only using them to check your work.

Student Responsibilities

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code (the Code), spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article II of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, and I will do so, 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).

ADA Policy

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 and Access (CDA), 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the CDA.

Addressing Sexual Misconduct

Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with disability, veterans status, or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of the Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677 (COPS).

Student Names and Personal Pronouns

Class rosters are provided to the instructor with the students legal name as well as Preferred first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me
of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Wellness Statement

Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.