

Math 3220 – 2 Foundations of Analysis II July 22, 2019

Credit Hours: Four

Meeting Time: MTWF, 9:40– 10:35 AM in ST 216.

Homepage: <http://www.math.utah.edu/~treiberg/M3226.html>

Instructor: Prof. A. Treibergs, JWB 224, 581 – 8350.  
Office Hours: MWF 11:45 AM – 12:40 PM (tent.) & by appt.  
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Prerequisites: "C" or better in MATH 3210.

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

Course Description:

Fundamental topics of multidimensional analysis including convergence of series, continuous functions, topology and differentiation and integration of multivariable real functions. The course will continue to develop the skill to make mathematical argument and write a rigorous proof.

Topics: We shall try to cover the following chapters

- Chapter 7. Convergence in Euclidean Space
- Chapter 8. Functions on Euclidean Space
- Chapter 9. Differentiation in Several Variables
- Chapter 10. Integration in Several Variables

Expected Learning Outcomes:

Upon successful completion of Math 3210 – Foundations of Analysis II, students will be able to: Describe vector space properties of high dimensional spaces of real numbers and spaces of functions; Determine the topological properties of their subsets such as openness, closeness, compactness, connectedness; Use the definitions of convergence to approximate by sequences, series, and functions; Determine the continuity, differentiability, and integrability of multivariable functions; Apply the Implicit Function Theorem, Taylor's Theorem and to maximize functions defined on surfaces of the space and master definitions and produce rigorous proofs of results that arise in the context of real analysis, write solutions to problems and proofs of theorems that meet rigorous standards based on content, organization and coherence, argument and support, and style and mechanics.

Teaching and Learning Methods:

Material will be presented in lectures and read from the text and other sources. Students will solidify their learning by solving problems assigned weekly. Students will ask questions and present solutions in regular classroom discussions. Students may benefit from one-on-one instruction by consulting the instructor during office hours.

Evaluation Methods and Grading

Homework: To be assigned weekly.

Homework will be due Fridays and will be collected in class. Papers turned into the grader Brendan Black's

mailbox in the math mail room (JWB 228) by 3:00 PM Fridays before he leaves will be regarded as being turned in on time. Homework that is late but not more than one week late will receive half credit. Homework that is more than one week late will receive no credit at all.

**Exams:** Calculators laptops, tablets, phones, text messaging devices, and other books will not be allowed.

**Midterms:** There will be three in-class one-hour midterm exams on Wednesdays Sept. 11, Oct. 23 and Nov. 20.

**Final Exam:** Thurs., Dec. 12, 8:00 am – 10:00 pm. Half of the final will be devoted to material covered after the third midterm exam. The other half will be comprehensive. Students must take the final to pass the course.

**Course grade:** Best two of three midterms 40% + HW 30% + final 30%. Grades will be assigned "on the curve."

**Withdrawals:** Last day to add without permission code is Aug. 23. Last day to add/drop class is Aug. 30. Until Oct. 18 you can withdraw from class with no approval at all. After that date you must petition your dean's office to be allowed to withdraw.

**ADA:** 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 this class, reasonable prior notice needs to be given the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All information in this course can be made available in alternate format with prior notification to the Center for Disability Services ([www.hr.utah.edu/oeo/ada/guide/faculty/](http://www.hr.utah.edu/oeo/ada/guide/faculty/))

**Faculty and 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. Students 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, 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 the Faculty Rules and Regulations, it is 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. Faculty must strive in the classroom to maintain a climate conducive to thinking and learning (PPM 6-316). Students have a right to support and assistance from the University in maintaining a climate conducive to thinking and learning (PPM 6-400).

**Student Safety:**

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including

helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).

**Note:** The syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.