

## Advanced Calculus II

**Instructor:** Luan Thach Hoang

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**Time and Classroom:** MWF 9:00 a.m.-9:50 a.m., Room MA 016 (Mathematics Building)

**Office hours:** MWF 10:30am-11:30am

**Course website:** <http://www.math.ttu.edu/~lhoang/2024Fall-M4000/>

Updates about the course and other related announcements will be posted on this webpage.

**Prerequisite:** MATH 4350.

**Text:** *Introduction to Real Analysis*, 4th edition by R. G. Bartle and D. R. Sherbert, published by Wiley & Sons, Inc., and Chapter 11 of *Methods of Real Analysis* by Goldberg, 2nd ed.

**Course Description:** This course covers theory of differentiation and integration, sequences and series of functions, introduction to measure theory. Students are expected to present rigorous proofs. This is a writing intensive course.

### Course Outline:

- Review, supplements
- Chapter 6 - Differentiation (sections 3-4)
- Chapter 7 - The Riemann integral
- Chapter 8 - Sequences of functions
- Chapter 9 - Infinite series
- Chapter 10 - The generalized Riemann integral
- Chapter 11 - A glimpse into topology
- Chapter 11 from Goldberg

**Student Learning Outcomes:** Students learn how to think and reason abstractly in the context of analysis, and learn how to write correct and clear mathematical arguments in this context. There will be a heavy emphasis on proofs, especially epsilon-delta proofs. Concepts and skills to be mastered by the students include but are not limited to: L'Hospital's Rules, Taylor's Theorem, the Riemann integral, sequences of functions, infinite series, introduction to the topology of the line, introduction to Lebesgue measure and integration.

**Methods of Assessment of Learning Outcomes:** Assessment of the learning outcomes will be achieved through homework assignments, writing exercises, two midterm exams, and a final exam.

**Homework Assignments:** Written homework will be assigned weekly and will be collected in class. Each is worth of 100 points.

**Writing Exercises:** Writing exercises will be assigned weekly and will be collected in class. Each is worth of extra 10 points added to the homework grades.

**Grading Policy:** Homework will count for 30% of the grade. The lowest score of homework will be dropped. There will be two midterm exams in class, each will count for 20% of the grade. The final exam

will count for 30% of the grade. All in-class exams are closed-book. No make-up exams are given unless legitimate documents for excuses are presented to the instructor at least a week in advance. Grading Scale: A: 90%-100%, B: 80%-89%, C: 70%-79%, D: 60%-69%, F: below 60%

**Attendance Policy:** Students must go to lectures and attendance will be taken. If you miss no more than four lectures, a bonus of three points will be added to your final grade.

**Examination Schedule:**

- Midterm 1: Wednesday, October 2, 2024, in class.
- Midterm 2: Wednesday, November 13, 2024, in class.
- FINAL EXAM: Monday, December 9, 7:30 a.m. - 10:00 a.m., Room MA 016.

**Critical Dates:**

- Aug. 22: Classes begin.
- Aug. 27: Last day for student-initiated addition of a course on MyTech.
- Sep. 2: Labor Day. University Holiday.
- Sep. 9: Last day for student-initiated drop on MyTech without academic penalty (drop does not count against drop limit).
- Sep. 10: Student-initiated drop made on or after this date counts against drop limit.
- Nov. 18: Last day for student-initiated drop on MyTech with academic penalty (counts against drop limit).
- Nov. 25 - Dec. 4: No exams.
- Nov. 27 - Dec. 1: Thanksgiving holiday. No classes.
- Dec. 3: Last day of classes.

**TTU Policies.** Texas Tech Policies Concerning Academic Honesty, Special Accommodations for Students with Disabilities, Student Absences for Observance of Religious Holy Days, and Statement of Accommodation for Pregnant Students may be found on Blackboard. Relevant Texas Tech policies can be found here:

- <https://www.depts.ttu.edu/tlpdc/RequiredSyllabusStatements.php>
- <https://www.depts.ttu.edu/tlpdc/RecommendedSyllabusStatements.php>

Some of the policies are below.

ADA accommodations. Any student who, because of a disability, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services, during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at 335 West Hall or (806) 742-2405.

Religious holy day. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code 11.20. A student who intends to observe a religious holy day should make that intention known to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under Section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Academic Integrity. Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating intellectual honesty and ethical behavior. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers.

**Civility in the Classroom:** Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from engaging in any other form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class.

**Advice:** Come to class regularly, work on homework problems. Ask questions in class and get help from the instructor during the office hours. Master the material quickly and *do not* wait too late until the midterms or the final exam. Students are encouraged to give feedbacks to the instructor during the semester.

*NOTE:* When needed, the instructor will communicate with the students using their TTU email addresses. The student must make sure that his/her TTU email functions properly.

**Handouts:**

- [Syllabus](#)