

Math 5341 – Real Analysis

Fall 2024

Professor: Dr. David Milan

Office: RBN 4001

Office Hours: 1:30-2:30pm MWF, or by appointment.

Email: dmilan@uttyler.edu

Office Phone: (903)565-5839 (email is best)

Web: class page on canvas

Class Meeting Time: MWF 9:05 – 10:00am

Required Text: Measure, Integration & Real Analysis by Axler. The book is available for free at the author's website: <https://measure.axler.net/>

Course Description: Topics include set theory, the real number system, Lebesgue measure, the Lebesgue integral, differentiation and integration, classical Banach spaces.

Student Learning Outcomes: By the end of this course, the student will be able to do the following:

- Describe Riemann and Lebesgue integration, as well as discuss the differences between and similarities of the two theories.
- Prove classical theorems concerning Lebesgue integration.
- Solve problems in measure theory.
- Describe L^p spaces and prove basic results about them

Course Evaluation: Your grade will be based on:

Homework and Participation	25%
Exam 1	25%
Exam 2	25%
Exam 3	25%

Important Dates:

September 2 – Labor Day Holiday, no class.

September 9 – Census date. Last day to change schedule or file for grade replacement.

November 4 – Last day to withdraw.

November 25-29 – Thanksgiving Holiday, no class.

December 9 – Final Exam, 8:00am – 10:00am.

Homework

Students are encouraged to collaborate on homework assignments, but each student must write his or her solutions alone. You should be able to explain your homework solutions at the board without referring to your written work.

Policies:

See <https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information.pdf> or the syllabus module on Canvas for many important University policies.

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

For this course, all tests must be done in person without the assistance of AI. Also, in my experience, large language models are very bad at writing proofs.