Math 4499 – Independent Study
Topic: Foundations of Mathematics
Spring 2026

Professor: Dr. David Milan   **Office**: RBN 4001

Office Hours: TBA

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Web: class page on canvas   **Class Meeting Time**:   M-R 9:05–10:00 am
                                                                                 Classroom: BEP 215

Required Text: *Book of Proof*, third edition by Richard Hammack. This book is available for free at the author's website: https://richardhammack.github.io/BookOfProof/, or for $26 on Amazon.

Prerequisites: Math 2414 – Calculus II

Course Description: Study of elementary logic, intermediate set theory, relations, functions and countable number systems.

Learning Outcomes: Upon completion of this course, students should be able to do the following:
- Write complete, correct and coherent proofs (critical thinking & communication)
- Understand and use some fundamental mathematical concepts such as logic, techniques of proof, set theory, and the principle of mathematical induction.

Course Evaluation: Your grade will be based on:

HW, Attendance, and Participation	25%
Three Exams	60%
Final Exam	15%

The grading scale will be no harsher than 90% = A, 80% = B, 70% = C, 60% = D.

Important Dates:
January 19: Martin Luther King Jr. Holiday
January 26: Census date: date to withdraw w/o penalty, grade replacement deadline
March 9-13: Spring Break
March 30: Last day to drop a course with a W.

Tentative Weekly Schedule

Week 1 (Jan. 12 – Jan. 16):	1.1—1.4
Week 2 (Jan. 19 – Jan. 23):	1.5—1.7
Week 3 (Jan. 26 – Jan. 30):	2.1—2.4
Week 4 (Feb. 2 – Feb. 6):	2.5 – 2.8
Week 5 (Feb. 9 – Feb. 13):	2.9 – 2.10, **Test 1**
Week 6 (Feb. 16 – Feb. 20):	4.1—4.4, 5.1
Week 7 (Feb. 23 – Feb. 27):	7.1, 8.1—8.3
Week 8 (Mar. 2 – Mar. 6):	9.1—9.3, **Test 2**
Week 9 (Mar. 9 – Mar. 13):	Spring Break
Week 10 (Mar. 16 – Mar. 20):	10.1—10.5
Week 11 (Mar. 23 – Mar. 27):	11.1—11.4
Week 12 (Mar. 30 – Apr. 3):	12.1—12.3
Week 13 (Apr. 6 – Apr. 10):	**Test 3**

Week 14 (Apr. 13 – Apr. 17):	12.4—12.6
Week 15 (Apr. 20 – Apr. 24):	14.1—14.3
Week 16 (Apr. 27 – May 1):	**Final Exam**

In-Class Presentations: A crucial part of proof writing is communicating a convincing argument to others. We develop this skill by having frequent student presentations of proofs.

I will keep a tally of the number of times students present *high quality* work and the number of times they make *useful* comments during other students' presentations. I will also note absences from class in this portion of the grade. I will update each student throughout the semester with his or her grade in this category. In order to do well, students should make an effort to attend all classes and to finish problems before the next class meeting.

Exams: As on the homework and the in-class presentations, students should expect to write high quality proofs on all exams. The focus will not be on memorization of terminology nor will the test consist of a series of routine calculations.

University Policies: See https://www.uttyler.edu/offices/academic-affairs/files/syllabuspolicy.pdf for these important University policies: UT Tyler Honor code, student rights and responsibilities, campus carry, UT Tyler a tobacco-free university, grade replacement and forgiveness, state-mandated course drop policy, student accessibility and resources, student absence for university-sponsored events, social security and FERPA, emergency exits and evacuation, and student standards of academic conduct.

Final Exam: Monday, April 27 8am-10am in BEP 215.

Artificial Intelligence Statement

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 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 graded work must be done in person without the assistance of AI. You can however, use AI to generate practice problems and solutions if you like.