

MATH 3310, Section C01
Fall 2019
Introduction to Critical Reasoning and Proof

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IMPORTANT: When e-mailing me through this address, please follow the subject line convention "Math 3310: <your title here>" so that it is filtered correctly in my inbox.

Lectures: 9:00 – 9:50 M/W/F.

Office Hours: M/W/F 1:00 PM – 2:00 PM, or by appointment.

Text: *Mathematical Proofs: A Transition to Advanced Mathematics*, (3rd ed.) by Chartrand, Polimeni, and Zhang.

Prerequisites: C or better in Math 2450, or departmental permission.

Course Webpage: hosted at <https://ttu.blackboard.com>.

About the course: The goal of this course is to teach students how to construct and organize their mathematical reasoning and develop skills for reading and writing mathematical proofs.

Expected learning outcomes: The students will understand and be able to use the following concepts:

- Sets (element, subset, union, intersection, product, cardinality)
- Functions (injective, surjective, bijective, composition)
- Equivalence relations (equivalence class, congruence modulo n , modular arithmetic)

The students will become proficient in reading and writing mathematical proofs. To this end the following concepts will be covered:

- Truth tables and logic (statements, negation, implications, quantifiers, equivalence)
- Direct proofs
- Contrapositive proofs
- Proof by contradiction
- Proof by cases
- Proof by mathematical induction

Method of Assessment:

(1) Written Homework:	25%
(2) Attendance and Quizzes:	10%
(3) Exam 1 9/18:	15%
Exam 2 10/23:	15%
Exam 3 11/22:	15%
(4) Final Exam 12/9:	20%

Homework: Homework will be assigned regularly and submitted on paper. Assignments may be stand-alone problem worksheets or short “projects” that develop a single concept over the course of a week.

Quizzes: Short 10-20 minute quizzes may occur periodically at the professor’s discretion. They may be either announced or unannounced.

Exams will be one 50-minute class period long (except for the final which is 2.5 hours), administered by me in our usual classroom. If you have a problem with any of the dates above, **notify me immediately** so that we can schedule an earlier time for you to take the exam. Note that there will be no make-up exams allowed after the exam dates listed. The final exam will be held **Monday 12/9 from 7:30 – 10:00 AM**.

Note: At the end of the semester, the lowest grade in Category (1) will be dropped.

Letter Grades:

The following cutoffs will be used as the *strictest possible* cutoffs for letter grades. Further adjustments downward may be made throughout the semester depending on the performance of the class.

A: 90-100% **B:** 80-89% **C:** 70-79% **D:** 60-69% **F:** <60%

Texas Tech Operating Policies and Procedures:

The following three items are brief excerpts. The complete policies are available at <http://www.depts.ttu.edu/opmanual/>.

Academic Honesty (OP 34.12):

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension. “Scholastic dishonesty” includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

ADA Accommodation (OP 34.22):

Any student who, because of a disability, may require special arrangements in order to meet the 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 that instructors are not allowed to provide classroom accommodations to a 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 Observance (OP 34.19):

"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 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Civility in the Classroom:

Texas Tech University endeavor to foster a classroom climate of mutual respect among students and between students and teacher. Mutual respect means that we should be tolerant of different ideas and varying opinions about topics of discussion in class, that we address each other respectfully and without interrupting while others are speaking, and that we do not engage in disruptive behavior in class. Signs of disrespect include, but are not restricted to: ringing cell phones (students must turn them off or leave them home), reading a newspaper or other material that is not part of a class assignment while in class, talking with classmates during class, eating and drinking in class***, and similar disruptive behaviors. Students who engage in disruptive behavior will be warned. Repeated disruptive behavior may result in the student being asked to leave the classroom.

***** I do not mind if you eat/drink in class, but please be considerate about it.**

Important University Dates:

September 11 th	Last day to drop (without penalty)
November 26 th	Last day to drop (with penalty)
Nov. 26 th – Dec. 1 st	Thanksgiving holiday (no class)