

Mathematics 3310 (Fall 2019): Introduction to Proofs

Instructor: Stephen Peña, Graduate Part-time Instructor
Lectures: MWF 12–12:50 p.m., MATH 017
Office hours: MWF 1–2:50 p.m., MATH 005, or by appointment
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1 Course description

The following basic topics are guaranteed to be covered:

- Truth tables and general logic;
- Direct Proofs;
- Proof by Contrapositive;
- Proof by Contradiction;
- Proof by Induction;
- Proofs Involving Sets/Functions

Additional topics will be selected from a variety of mathematical disciplines.

2 Student learning outcomes

Upon completion, students will be able to understand the following concepts and use them in various problems: Logic, techniques of proof, induction, writing proofs involving sets, relations, functions, graphs, number theory, and construction of real numbers.

3 Prerequisite

MATH 2450 or concurrent with MATH 2450 or consent of department.

4 Assessment of learning outcomes

The learning outcomes will be assessed based on a combination of the following factors:

- performance on homework;
- 2 Midterms;
- Final Exam;

At the end of the course the number of completed assignments will be divided by the number of all assignments, and the final grade will be assigned according to the following rubric:

$$[.9, 1] \mapsto A, \quad [.8, .9) \mapsto B, \quad [.7, .8) \mapsto C, \quad [.6, .7) \mapsto D, \quad [0, .6) \mapsto F.$$

5 Text

Lecture notes will be posted on my website, although, most likely, many more details will be provided during the actual in-class lectures, as usual. I will also recommend sections of several different books as the course progresses, as their respective material becomes pertinent.

6 Announcements

Announcements about homework and other matters will be made via TTU email. Students are expected to check their TTU email regularly for updates.

7 Operating policy 34.04:Class attendance

Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected, and the university reserves the right to deal at any time with individual cases of non-attendance.

The instructor determines the effect of absences on grades consistent with university policy for excused and unexcused absences. When absences jeopardize a student's standing in a class, it is the responsibility of the instructor to report that fact to the student's dean. Excessive absences constitute cause for dropping a student from class. The drop may be initiated by the instructor but must be formally executed by the academic dean. If the drop occurs before the 45th class day of a long semester or the 15th class day of a summer term, the Office of the Registrar will assign a grade of DG. If the drop occurs after those times, the student will receive an F. In extreme cases, the academic dean may suspend the student from the university.

Department chairpersons, directors, or others responsible for a student representing the university on officially approved trips must notify the student's instructors of the departure and return schedules. The instructor so notified must not penalize the student, although the student is responsible for material missed. Any student absent because of university business must be allowed to make up missed work within a reasonable span of time or have alternate grades substituted for work due to an excused absence. Students absent because of university business must be given the same privileges as other students; e.g., if other students are given the choice of dropping one of four tests, then students with excused absences must be given the same privilege.

In case of an illness that will require an absence from class for more than one week, the student should notify her/his academic dean. The dean's office will inform the student's instructors through the departmental office. In case of class absences because of a brief illness, the student should inform the instructor directly.

Refer to OP 34.19, Student Absence for Observance of Religious Holy Days, for information regarding an absence to observe a religious holy day.

8 Operating policy 34.19: Student absence for observance of religious holy day

1. "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.

2. A student who intends to observe a religious holy day should make that intention known in writing 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.

3. 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.

9 Operating policy 34.22, section 2b: Reasonable accommodation for students with disabilities

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: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in West Hall or call 806-742-2405.

10 Operating policy 34.12, section 5: Academic dishonesty definitions

Students must understand the principles of academic integrity, and abide by them in all class and/or course work at the University. Academic Misconduct violations are outlined Part I, section B.1 of the Code of Student Conduct. If there are questions of interpretation of academic integrity policies or about what might constitute an academic integrity violation, students are responsible for seeking guidance from the faculty member teaching the course in question.

Academic misconduct includes cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, violations of published professional ethics/standards, and any act or attempted act designed to give unfair academic advantage to oneself or another student. Additional information about academic misconduct is available in the Texas Tech University Handbook in Part II, section B of the Community Policies section in the Student Handbook at asd.

11 Civility in the classroom

Texas Tech University endeavors 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: using cell phones (students must turn them off or leave them at home), reading a newspaper or other material that is not part of a class assignment while in class, talking with classmates during class, eating 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.