

# MATH 3300: Introduction to Proofs

## Section 001 – Fall 2018

**Time:** Mon, Wed 2:30 - 3:50 PM

**Classroom:** Pickard Hall 102

**Instructor:** Dr. Backs

**Office:** Pickard Hall 448

**Phone:** (817) 272-7163

**E-mail:** [kbacks@uta.edu](mailto:kbacks@uta.edu)

**Office Hours:** Mon, Wed, Fri 10 – 11 am;  
Mon, Wed 1 - 2:30 pm

**Website:**

<https://www.uta.edu/profiles/karl-backs>

**Prerequisite:** Math major or math intended major. B or better in MATH 1426 or HONR-SC 1426; OR C or better in MATH 2425 or HONR-SC 2425.

**Optional Textbook:** Foundations of Mathematics by Thomas Q. Sibley. ISBN: 978-0-470-08501-1 A copy of the textbook is on reserve in the Central Library (2-hour loan).

**Course Content:** Techniques for analyzing and constructing proofs of mathematical propositions. The propositions chosen exhibit properties of functions, relations, sets, cardinality, and other concepts in mathematics. An axiomatic approach to some areas in mathematics. Oral presentation of proofs is required.

**Learning Outcomes:** On successful completion of this course, students will be able to

- think critically about mathematical statements using sound principles of logic,
- give clear explanations of solutions and reasoning, both orally and in writing,
- read and understand mathematical writing at the level of the textbook,
- decide whether statements involving the topics of the course are true or false,
- construct correct mathematical arguments to prove their claims about statements on the topics of the course,
- create examples or counter-examples and apply them appropriately to prove or disprove statements about the topics of the course, and
- be confident about the correctness of their mathematical reasoning and proofs.

### Expectations of the Student:

- **Attendance:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. Attendance is mandatory and counts toward the course grade as described below. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.
- **Participation:** Prepare all the assigned exercises and study problems, and bring your work to every class. Be prepared to participate fully in oral presentations and class activities.
- **15 hours per week outside of class.** Spend at least 15 hours per week outside of class studying and (re-)working problems for this course.
- **Course notebook.** Keep a neat, up-to-date, and organized binder or notebook with correct solutions to all of the problems assigned or discussed in class.
- **MavMail and Announcements:** Keep an activated MavMail account and check it regularly. You are responsible for all information that I send to your MavMail account and for all announcements made in class or on the course website.

- **Asking for help when needed.** Ask for help on material that you may not be grasping fully. You may work with your classmates, come to office hours, or send me an e-mail with specific questions.
- **Personal responsibility.** You carry the ultimate responsibility for your learning. The onus is on you to attend every class, keep up daily with the assignments, put in the expected hours, keep your course notebook up-to-date, and ask for help when needed.

**Study Problems and Oral Participation:** Study problems will be assigned. At every class, be prepared to explain orally, and in writing, your solution to any study problem assigned so far in the course. You may also be asked to explain your reasoning to questions that arise during class discussions. You are expected to work out correct solutions to all study problems, resolve any questions that you have on them, keep your correct solutions organized in your class binder or notebook, and bring these solutions to every class. Study problems are to be prepared as follows:

- For each problem, write out the complete question above the solution.
- Explain all your answers and justify all your claims in your arguments and proofs.

**Scoring for Prepared Attendance with Oral Participation:** At every class, you will receive an attendance and participation score according the following scheme. Every class counts in the final grade, and no attendance/participation score is dropped.

- 2, for being present during the entire period with good preparation and presenting a proof on the board.
- 1, for being present during the entire period and participating in discussions.
- 0, if you are not present during the entire period, are inadequately prepared, or do not fully participate. If you arrive late, your score will be recorded as 0; if you would like consideration for raising this to 1, please inform me *after class on the same day*.
- 0, for missing class for any reason. This records that the in-class active learning experience for that day of the course was missed.
- -2, if no students present a proof at the board.

**Quizzes:** Zero to two short quizzes will be given each week. Quizzes are cumulative and may cover any study problems, material, or readings assigned or discussed up to that point. Come to every class prepared for a possible quiz; the dates of the quizzes may be unannounced. A missed quiz cannot be made up. The two lowest quiz scores will be dropped at the end of the semester. Here are some tips on preparing for the quizzes:

- Regularly review all class notes and study problems.
- Re-work study problems and problems discussed in class without resorting to notes. Consult notes only after good effort to re-work the problems on your own.
- Set aside ample time to work out all study problems carefully before the next class.
- Form study groups with classmates and work on coursework together.
- Pinpoint the specific question if you “get stuck” on a problem. Often in seeking to identify the question, one will see how to solve it.
- Meet with the instructor to settle remaining questions that you may have.

**Final Exam:** There will be a comprehensive final exam on Tuesday, August 14 from 3:30 – 5:20 pm, in the same room as the class. A missed final exam cannot be made up.

**Grading:** Your work will be graded on correctness, completeness, and clarity.

Attendance with Oral Participation (every day counts):	25%
Quiz Average (excluding two lowest quiz scores):	25%
Midterm	25%
Final Exam:	25%
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Course average	100%

Your course average determines your final grade. A: 90—100%. B: 80—89%. C: 70—79%.

D: 60—69%. F: 0—59%. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

## **Policies of the University of Texas at Arlington:**

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

**Drop Date:** Friday, November 2 by 4 pm.

**Drop for Non-Payment of Tuition:** If you are dropped from this class for non-payment of tuition, you may secure an Enrollment Loan through the Bursar's Office.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: **The Office for Students with Disabilities, (OSD)** <http://www.uta.edu/disability/> or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability/).

If you require an accommodation based on disability, I would like to meet with you in the privacy of my office, during the first week of the semester, to make sure you are appropriately accommodated.

**Counseling and Psychological Services (CAPS)** [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Non-Discrimination Policy:** The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos).

**Title IX Policy:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in

educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Michelle Willbanks, Title IX Coordinator at (817) 272-4585 or [titleix@uta.edu](mailto:titleix@uta.edu)*

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>. Faculty are encouraged to discuss plagiarism and share the following library tutorials <http://libguides.uta.edu/copyright/plagiarism> and <http://library.uta.edu/plagiarism/>

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**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and take an immediate right or left, walk down the hallway toward the corner of the building and descend the stairs. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Students are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/studentsuccess/success-programs/programs/resource-hotline.php>