PRACTICAL INFORMATION

Class time:	TR 12:30–1:50 pm
Class room:	MATH 114
Instructor:	Lars Winther Christensen
Office:	WEEKS 347
Office hours:	W 11 am–1 pm, R 3:30–5 pm, or by appointment (WEEKS 347)
	TR 2–3 pm (TA Olivia Brubaker, MATH 106A)
E-mail:	`lars.w.christensen@ttu.edu`
Homepage:	`www.math.ttu.edu/~lchriste/teaching.html`

COURSE DESCRIPTION

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.

Required text: *Mathematical Proofs: A Transition to Advanced Mathematics*, 4th edition by Chartrand, Polimeni, and Zhang; Pearson (2018).

Prerequisites: Math 2450 or consent of the department.

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 module 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, logical equivalence)
- Direct proofs
- Contrapositive proofs
- Proof by contradiction
- Proof by cases
- Proof by mathematical induction

LEARNING ASSESSMENT

Graded assessment is done through homework and exams. Other assessment techniques will also be used; these include direct questioning, problems to be solved in class, and discussions during office hours. Additionally, problems will be assigned for student self-assessment. The homework problems will focus on the concepts listed above. They will be constructed such that they facilitate the students' development of skills in understanding and creating written mathematical argumentation. Exam problems will be constructed such as to test if the students have acquired the expected command of the concepts and developed the expected skills in mathematical argumentation.

COURSE ORGANIZATION

Of the 29 class periods, 26 will be spent on lectures and in-class activities and 3 on exams and feedback. The plan is to cover sections 1.1–1.6 (4 class periods), 2.1–2.10 (4 c.p.), 3.1–3.4

(4 c.p.), 5.1–5.2&4 (2.5 c.p.), 6.1–6.3 (4 c.p.), 9.1–9.6 (2.5 c.p.), 10.1–10.5 (3 c.p.), and 11.1–11.3 (2 c.p.). Reading assignments are posted on Blackboard, which is updated after every class.

Exams: In-class exams take place on Thursday 6 October and Thursday 17 November. The final exam is on Friday 9 December, 1:30–4:00 pm.

Other important dates:

Last day to drop a course without penalty	12 September
Last day to drop a course	22 November
Last day to withdraw	22 November
Thanksgiving Vacation	23–27 November

ASSIGNMENTS, GRADES, AND GRADING

Two in-class exams are given during the semester. Regular homework will be assigned 12 times during the semester. Students are encouraged to work together on the homework problems. Results and grades are posted on Blackboard.

Grading: On exams and homework, partial credit for correct steps will be awarded even if the final answer is wrong. Full credit will be given only if the final answer and all intermediate steps are correct. A correct final answer does not *per se* guarantee any credit.

Attendance: Students who without valid reason miss 5 classes receive no attendance credit, those who miss 3 or 4 classes receive half credit, and those who miss at most 2 classes receive full credit.

Deadlines and make ups: Homework is not accepted after the deadline. Make-up exams are only given if the original exam was missed for a valid, university approved, reason.

Final grade: Homework (10 assignments) and exams (3) are counted towards the final grade with weights as follows: Homework 30% (3% ea.), in-class exams 30% (15% ea.), and final exam 30%. Attendance counts for 10%.

GENERAL POLICIES

Academic Integrity, Students with Disabilities, Religious Holy Days, and COVID-19:

Please see Texas Tech University's required policies
`www.depts.ttu.edu/tlpdc/RequiredSyllabusStatements.php`.

What to do in case of emergency: If a student encounters a personal problem that affects their ability to attend class or complete their work on time, they should immediately contact the Dean of Students office via phone (806-742-2984) or email (`deanofstudents@ttu.edu`). The Dean of Students can help with emergencies including COVID, car accidents, death of a family member, inability to afford food, health issues, and more.

In exceptional circumstances, the Dean of Students can authorize exceptions to class policies. That is why it is critically important to immediately inform both your teacher and the Dean of Students office of any emergency. In addition, Title IX reporting and support resources are available at `www.depts.ttu.edu/titleix/`.

What to do in case of an issue with your teacher: Should a student encounter an issue in this course, they must follow these steps, in order. 1. First discuss the issue with the teacher. Explaining your concern calmly and clearly will usually resolve the problem. 2. If the issue is not resolved, or the issue is of a matter that the student is not comfortable discussing with the instructor, the student should contact Dr. Brock Williams (brock.williams@ttu.edu), the Associate Chair for Undergraduate Studies. Do not contact the Dean, Provost, Chancellor, etc, without first following these steps.