MATH 4306-MATH 5306 Topology
The University of Texas at Tyler, Spring 2026

Time and Place: MoWeFr 9:05 AM - 10:00AM, Ratliff Building North (RBN) 4021

Instructor: Pamela Delgado, Ph.D

Office: RBN 4009

e-mail: pdelgado@uttyler.edu

Office Hours: MoWeFr from 4pm to 5 pm, in my office Room RBN 4009.
Office hours can also be arranged at a different time if the times above do not work for you, please email me 2 business days in advance so we can find a common time to meet.

Overview: Study of metric spaces and topological spaces with emphasis on compactness, connectedness, covering properties, separation, and metrization.

Prerequisite: MATH 3345.

Textbook: Topology, by S. W. Davis, a pdf of the text will be provided.

Grading procedure:
Three exams 60% (each worth 20%)
Final exam 20% (comprehensive)
Homework 10%
Quizzes 10%

Grading scale:
A: Greater or equal to 85%, **B:** greater or equal to 70%, strictly less than 85%,
C: greater or equal to 55%, strictly less than 70%, **D:** greater or equal to 40%, strictly less than 55%,
F: striclty less than 40%.

Exam dates:
Exam 1: Wed Feb 11th
Exam 2: Wed March 4th
Exam 3: Wed April 15th
Final exam: Mon April 27th, from 8 am to 10 am

Important Dates:

- January 26th. Census date: Last date to withdraw without incurring grades of "W" or "Q".

- March 30th. Last day to withdraw from one or more courses with a W.

For more important dates visit: http:///www.uttyler.edu/academics/academic-calendar-25-26/academic-calendar-15-week-and-summer.php

Homework: Homework will be assigned regularly. You must submit your solutions on Canvas as a pdf file by the due date and time. Your solutions must be correct, complete, legible, and written neatly for full credit. No extensions or make-up assignments will be granted for missed homework. The lowest homework grade will be dropped. Each assignment will include exercises of varying difficulty. I will select specific exercises for grading, with an emphasis on those of medium to high difficulty. **The main goal of homework is to help you prepare for the exams in this course**. You are encouraged to collaborate with your classmates, and you may use any resources to solve the exercises. However, anything you submit must be something you understand and can explain to me or the class. **Solutions to the assigned homework problems may be available online; however, they often use notation, definitions, or methods that differ from those presented in lecture, and may also omit important steps or justifications. For these reasons, such solutions are not acceptable in this class**. Moreover, struggling

with an exercise or proof is a vital part of the learning process. It challenges you to think deeply and helps solidify your understanding. Don't skip this important step in your mathematical development by immediately searching for solutions elsewhere. Make sure to give it a serious attempt on your own first; only then will discussing the exercise with your classmates or looking at others' solutions add real value to your exam preparation.

Additional exercises may be assigned throughout the term for practice; these will not count toward your course grade.

Evaluations: We will have three exams and a comprehensive final exam. The exam dates are listed above. We will also have regular quizzes, which will be announced during the prior lecture. The lowest quiz will be dropped.

Attendance: Students are expected to attend every lecture and to arrive on time. If a lecture is missed, it is the student's responsibility to catch up on the material covered and to find out about any announcements made during class.

Make-up Exams/Evaluations: Make-up evaluations are **only given if you have a legitimate justification; documentation to support your justification must be provided**. Make-up evaluations must be completed within three days of your return to your academic duties. It is the responsibility of the student to communicate with me promptly and regularly until arrangements for the missed work have been established. If this criterion is not met, make-up evaluation/work won't be granted.

Legitimate justifications for make-up evaluations include illness (affecting you or your child), pregnancy related absences, or academic conflict that will prevent you from being in class. If you know you will be missing classes, you need to contact me as soon as you become aware of the lecture you will miss. **In case of illness as justification for a missed evaluation, you will need to present a doctor's note dated within 72 hours of the missed lecture.** You can also go to the Health Clinic on campus, to make an appointment call (903) 939-7870. Pregnant and parenting students must work with the Parenting Student Liaison to satisfy the requirement of documentation supporting your justification. You can reach out to Parenting Student Liaison at parents@uttyler.edu. Approval for make-up evaluations due to personal reasons will be granted only in exceptional circumstances for substantial grounds, and documentation will still be required. Early flights home, bus tickets to leave town, and family vacations are NOT valid excuses to miss or reschedule a final exam.

Grade Revision Requests for Evaluations: If you believe there is an error in the grading of an exam, quiz, or other in-class evaluation, you must submit a request for a grade review within three (3) business days of the evaluation being returned to you. Requests made after this deadline will not be considered. You must also present the original evaluation in good condition (not torn, altered, defaced, or missing pages). I reserve the right to refuse review requests if the evaluation has been damaged or modified in a way that prevents fair re-grading. A grading scale/rubric is always applied, so grade revision requests must be based on a specific grading issue (e.g., points not added correctly, a correct step was overlooked, or your work matches the rubric) and not on a general belief that your grade "should be higher".

On quizzes and exams, incorrect work may be penalized, even if you later arrive at a correct final answer. This is especially important if you present more than one solution/approach for the same problem: if multiple solutions are shown, I will grade what is written, and contradictory or incorrect reasoning can reduce your score. To avoid this, present only the solution you intend to be graded, and clearly cross out any abandoned work.

Learning outcomes: After completing this course, you will be able to:

- Write complete, correct and coherent proofs (critical thinking and communication)

- Understand and use abstract mathematical concepts (critical thinking)

- Discuss properties of topological spaces and metric spaces

- Discuss the properties of separation, compactness, and connectedness.

Artificial Intelligence Statement:

From the University Policies and Information:
"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 (see below) 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 MATH 4306-MATH 5306:
As stated above, you may use any resources to solve the exercises on your Homework. For this course, **the use of AI tools is permitted only outside of lecture; however, if you choose to use them, you do so at your own risk**, given that you might obtain incorrect answers or answers based on results not studied in class. Even when the answers are correct and consistent with our lectures, relying solely on these tools **defeats the purpose of homework as a learning tool**. Homework is designed to help you understand and apply the material, which is essential for your success in this course. If you merely copy answers from AI without fully engaging with the problems, **you may find yourself unprepared for in-class evaluations, where NO electronic devices —and therefore no AI tools— will be allowed**. Ultimately, this approach could negatively impact your performance on exams and your overall understanding of the subject.

Academic Integrity: All students have the responsibility to demonstrate honesty and uphold the ethical standards of academic conduct in their academic endeavors. Academic dishonesty will be addressed seriously.

Resources:

- The Mathematics Learning Center (MLC), RBN 4021, is an open access computer lab for math students. There are tutors on duty for several hours each day to assist students, mostly on early-career courses. For more information about the MLC including the tutoring schedule visit: https://www.uttyler.edu/academics/colleges-schools/arts-sciences/departments/mathematics/math-learning-center.

University Policies and Resources: See https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information.pdf for important information on University policies and resources including Student Accessibility and Resources, student rights and responsibilities, Withdrawing from Class, Incomplete Grade and Grade Appeal Policy, Military Affiliated Students, Students on an F-1 Visa, Academic Honesty and Academic Misconduct, FERPA, Absences Policy, and campus carry.

UT Tyler is proud to be a tobacco-free campus.

Schedule: The following is a TENTATIVE schedule for lectures and is subject to change.

- Topics for exam 1: Sets, Metric spaces, continuity, topological spaces

- Topics for exam 2: Topological subspaces, product topology, separation axioms, compact and locally compact spaces

- Topics for exam 3: Connected spaces, pathwise connected, countability axioms

- Additional Topics for final exam: More on convergence, compactness, countability properties, and metrization

A message from your instructor:

To make the most out of the learning journey we are about to embark on, it is important we create an environment in our class that is safe and supportive for everyone to participate and share their input, regardless of race, gender, class, sexual orientation, etc. Both you and I have a duty to treat everyone with respect and courtesy, and you can expect the same treatment for yourself. This will allow for a space in which our individualities enrich the learning process.

The instructor reserves the right to change this syllabus, with due notice to the class, to best benefit the needs of the students.