

## Fall 2023 Texas A & M-Commerce Math 440.01E –Topology

This is the syllabus for Math 440-Topology, Section 01E for Fall 2023. Please read it carefully. You will be responsible for all information given in the syllabus, and for any modification to it that may be announced in the semester.

**Instructor:** Dr. Yelin Ou

Office: Binnion Hall 313.

Phone: (903) 886-5949

Fax: (903) 886-5945

E-mail: [yelin.ou@tamuc.edu](mailto:yelin.ou@tamuc.edu)

Webpage: <http://faculty.tamuc.edu/you/>

**Office hours:** TWR: 10:00-11:00am, MR: 2:00-2:30pm, or by appointment.

**Class schedule and room:** MW: 11:00am-12:15pm, BA 329.

**Text:** *Topology for beginners*, by Steve Warner, Publisher: Get 800 (April 25, 2019) ISBN-13: 978-0999811771

Portions of Lessons 1-5, 7-11, 13 and (if time permits) 12, 14 in the textbook will be discussed.

**Reference:** Introduction to Topology: Third Edition (Dover Books on Mathematics) Third Edition, by [Bert Mendelson](#).

**Course Description:** Topological spaces, topology of the real line, metric spaces, connectedness, compactness, separation axioms, mappings, continuity, homeomorphisms, product spaces.

**Prerequisite:** [MATH 332](#) or 2305 with a minimum grade of C.

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

1. Understand the concepts of sets, set operations, images and inverse images of functions and their computations;
2. Understand open sets, closed sets, boundary points, interior and closure of a set in the Euclidean topology on  $\mathbb{R}$  or  $\mathbb{C}$ ;
3. Understand and explain the limits and continuity on  $\mathbb{R}$  or  $\mathbb{C}$  in the language of open sets;
4. Understand the concepts of topology on a set and open sets, closed sets, boundary points, interior and closure of a set in generic topological space;

5. Understand and verify a topological basis and a basis for a topology;  
Verify subspace topology, product topology and metric topology;
6. Understand and verify continuity, homeomorphisms between general topological spaces.

**Instruction:** Instruction will include lectures, demonstration and discussions.

**Calculator & supplies:** A graphing calculator is needed for this course. A TI 84 calculator is recommended.

**Attendance:** Attendance will be checked and it is your responsibility to sign the daily roll sheet. It is your benefit to attend the class.

**Tests:** There will be two midterm and a final exams for the course. The tentative schedules for the exams are:

Test 1: Sept. 27, Wednesday 11:00am-12:15pm.

Test 2: Nov. 8, Wednesday 11:00am-12:15pm.

**Final exam:** The Final exam will be a comprehensive exam and is scheduled on  
**Dec 13, Wednesday, 10:30am–12:30pm.**

**No makeup** will be given for the tests. If you miss one test with evidence showing that you have an acceptable reason for that, the average of your other two test grades will be used as the grade of your missing test. This provision will only be applied to ONE exam, so students should make every effort to be present and well-prepared for all exams.

**Homework & Projects:** Homework will be assigned and collected to grade on a weekly basis. You are strongly recommended to work out homework assignments on a regular basis since **No one can learn mathematics without doing it!** Some homework problems or the similars will be used as test questions.

**Course grades:** The course grade consists of  
Homework & Quizzes: 20%  
Two tests : 50%  
Final exam: 30%.

The letter grades will be assigned using the following scale:

A: 90-100%   B: 80-89%   C: 70-79%   D: 60-69%   F: 0-59%

**Withdrawal Policy:** Concerning the deadlines and consequences of withdrawals please check on: <https://inside.tamuc.edu/admissions/registrar/academicCalendars/>

**Academic Integrity:** I have a **NO TOLERANCE** policy for cheating and if you are caught cheating you will fail this course. Cheating in this course includes the following:

- Giving or receiving answers during an exam or quiz.
- Viewing the exam or quiz answers of others.
- Having notes/practice work available during quizzes or tests.
- Possession or access to test items before the test is given.
- Deception in getting an excused absence to obtain the undeserved opportunity to make-up work.
- Use of cell phones or text messaging technology during exams or quizzes. You may not use the calculator on your cell phones.
- Improper citations in written works, or using another person's ideas and words as your own without giving proper credit.
- **Any** method, no matter how well rationalized or accepted, which improves a person's grade by any means other than study and skillful performances on exams and/or other assignments.

Students found guilty of an act of academic dishonesty in this course will be subject to receiving an "F" in this course.

**Classroom Behavior:** "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment" (See Student's Guidebook). A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

**The information for students with disability:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce, Gee Library, Room 132, Phone (903) 886-5150 or (903) 886-5835, Fax (903) 468-8148, email: [StudentDisabilityServices@tamuc.edu](mailto:StudentDisabilityServices@tamuc.edu)

**Counselling & Help:** The Counseling Center at A&M-Commerce, located in the Halladay Building, Room 203, offers counseling services, educational programming, and connection to community resources for students. Students have 24/7 access to the Counseling Center's crisis assessment services by calling

903-886-5145. For more information regarding Counseling Center events and confidential services, please visit [www.tamuc.edu/counsel](http://www.tamuc.edu/counsel)

**Tutoring & Help :** A better way to learn math is to keep progress and leave no gaps in one's study. So please get help as soon as you need it and do not wait until it is too late. You are welcome to get help from me during my office hours or by appointment) in my office or virtually via Zoom meeting.

**Campus Concealed Carry** Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to (<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

	Weekly Progress	Homework Due
W1	What is topology?	
W2	Sets & Set Operations	
W3	Relations & Partitions	
W4	Functions & Equinumerosity	
W5	Review & Test 1	
W6	Topology on $\mathbb{R}$	
W7	Topology on $\mathbb{R}$ & Topology on a metric space	
W8	Topology on a metric space	
W9	Topological Spaces	
W10	Topological Concepts	
W11	Review & Test 2	
W12	Topological bases	
W13	Product and Quotient space	
W14	Continuity & Homeomorphisms	
W15	Course Review	
W16	Final Exam	