

Spring 26 East Texas A & M University

Math 497.01E – Diff. Geometry

This is the syllabus for Math 497-Differential Geometry, Sections 01E for the Spring 2026. 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 during the semester.

Instructor: Dr. Yelin Ou

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Office hours: MW: 11am-12pm, TR: 2:00-3:00pm, R: 9:00-10:00am,
or by appointment.

Class meetings and room: MW, 2:00-3:15 pm, DTH 304.

Text and references: (both are free downloadable from internet)

1. Richard Koch, Lecture Notes on Differential Geometry, 2005.
2. Paul A. Blaga, Lectures on the Differential Geometry of Curves and Surfaces, Cluj-Napoca, April 2005

Course Description: Parametrizations of curves and surfaces in \mathbb{R}^3 ; curvature, torsion and Frenet formula of a curve; The 1st and the 2nd fundamental forms of a surface; Computing the angles and areas on a surface; Isometric and conformal transformations; The normal curvatures; Gauss curvature and the mean curvature. Minimal surfaces and geodesics.

Prerequisite: Math 2415 and Math 2318.

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

1. Understand and compute the curvature and the torsion of a curve and use them to characterize curves like straight line, circles, planar curves, and helices.
2. Understand and compute the 1st and the 2nd Fundamental Forms, The Gauss and the mean curvatures of a surface.
3. Understand the arclength of a curve, the area of a region and the angles between two curves on a surface. Understand the characterization theorems of isometric and conformal transformations between surfaces and explain some examples of such transformations.
4. Understand and explain the three models of geometry: Euclidean, Spherical, and Hyperbolic geometry.

5. Understand some examples of geodesics and minimal surfaces in the model geometries.

Instruction: Instruction will include lecture, group discussions, and some group work projects, based on time available.

Computer & supplies: Using of Mathematica (a computer algebra system available in computers in Math Lab located in 328 Binnon Hall) is helpful but not required for this course.

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: Feb. 18, Wednesday 2:00-3:15pm.

Test 2: April. 8, Wednesday 2:00-3:15pm.

Final exam: May 4th, Monday, 1:15-3:15pm

No makeup exam will be given unless you have verifiable evidence showing an acceptable reason to have to miss a test and, in that case, you must notify the instructor before the test or in the earliest possible time.

Homework & Quizzes: Homework will be assigned during each class period. You are strongly recommended to work out homework assignments on a regular basis since **No one can learn mathematics without doing it!** The assigned homework will be collected for grading every Wednesday in the $2k$ -th ($k=1, 2, \dots$) week. Some homework problems or their similar forms will be used as test questions.

Course grades: The course grade consists of

Homework:	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/documents/2526/2526%20Academic%20Calendar.pdf>

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.

Academic Integrity: This course has 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 from 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.

AI use policy: Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors’ guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty
13.99.99.R0.10 Graduate Student Academic Dishonesty

Students with Disabilities: 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/ Gee Library
Room 132 . Phone (903) 886-5150 or (903) 886-5835, Fax (903) 468-8148, and
Web: 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

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.

Getting 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. You are welcome to see me and get help during my office hours, or use zoom meeting or email communication for help.