

# Math 622: Differential Geometry (I)

## Spring 2020

**Lecturer:** Zhizhang Xie

**Lectures:** TR 11:10am - 12:25pm, Blocker 121

**Office:** Blocker 633C

**Email:** [xie@math.tamu.edu](mailto:xie@math.tamu.edu)

**Office Hours:** Monday 1:30 - 3:30pm or by appointment

**Prerequisites:** MATH 304 or equivalent; approval of instructor.

### Course Outline:

This course covers the following topics: curves, surfaces and generalizations to submanifolds of Euclidean space; smooth manifolds and mappings; differential forms; Lie groups and algebras; Stokes' theorem; de Rham cohomology; the Frobenius theorem; Riemannian manifolds.

### Textbooks:

*A Comprehensive Introduction to Differential Geometry, Vol. 1*, 3rd edition, by Michael Spivak.

Supplementary textbooks (optional):

- *Lectures on the Geometry of Manifolds*, by Liviu I. Nicolaescu (available at the author's website)
- *Cartan for Beginners: Differential Geometry Via Moving Frames and Exterior Differential Systems*, by Thomas A. Ivey and Joseph M. Landsberg, 2nd edition

### Course Homepage:

Homework assignments and other course information will be posted at the course webpage: <http://www.math.tamu.edu/~xie/teaching.html>

**Update (March 16<sup>th</sup>, 2020):** At the university's request, the classes during the week of March 16th – 20th are cancelled. Our class will move to online starting March 23rd. The class will meet through Zoom (an online meeting platform) at the regular class time: TR 11:10am - 12:25pm. All future course assignments (including homework, midterm and final) will be given through eCampus. You will also submit your assignments through eCampus. Office hours will be held through Zoom as well.

## Grading Standards:

Final grades will be determined based on:

Homework	Midterm	Final
40%	30%	30%

Tentative schedule for the midterm (subject to change):

- March 26th, Thursday

Letter Grades			
A	B	C	D
≥ 90%	80% - 89%	70% - 79%	60% - 69%

## Policies:

- **Excused absences:** Attendance is mandatory and may affect your grade. For excused absences we refer the student to Student Rule 7 at <http://student-rules.tamu.edu/rule07/>. Excuses for absences during an exam must be substantiated by appropriate documentation.
- **Make-up policies:** Students must make arrangements in advance if they expect to miss an exam or quiz. Exam absences due to recognized university-related activities, religious holidays, verifiable illness, and family/medical emergencies will be dealt with on an individual basis. In all cases of absence from exams a written excuse is required. Ignorance of the time and place of an exam will not be accepted as an excuse for absence.
- **Academic integrity:** The usual rules of academic integrity apply. In particular, the Aggie Honor Code “An Aggie does not lie, cheat or steal, or tolerate those who do” should be self-evident, see

<http://aggiehonor.tamu.edu/>

Students may, and are encouraged to, work together and discuss homework problems with each other. However, copying work done by others is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy.

- **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 believe you have a disability requiring an accommodation, please contact Disability

Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>

- **Title IX and Statement on Limits to Confidentiality:** Texas A&M University and the College of Science are committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws provide guidance for achieving such an environment. Although class materials are generally considered confidential pursuant to student record policies and laws, University employees — including instructors — cannot maintain confidentiality when it conflicts with their responsibility to report certain issues that jeopardize the health and safety of our community. As the instructor, I must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:
  - Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff, or third parties visiting campus.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (<https://scs.tamu.edu/>).

Students and faculty can report non-emergency behavior that causes them to be concerned at <http://tellsomebody.tamu.edu>.