

	Course	MATH 3380, Differential Geometry
	Instructor	Dr. Vladimir Dragovic
	Term	Spring 2013, Tuesday 1/15 (class begin), Thursday 5/2 (class ends)
	Meetings	TR, 1:00-2:15PM, FO 1.502

Instructor's Contact Information

Office Phone	(972)883-6694
Office Location	FA 2.402
Email Address	Vladimir.Dragovic@utdallas.edu
Office Hours	T 5:00-7:00PM

General Course Information

Pre-requisite	Math 2451 & Math 2418 & Math 2420
Course Description	Topics covered during this class will include: curves and surfaces, tangent vectors, tangent space, vector fields, differential forms; Curvature and torsion of curves, Riemannian metrics, curvature of surfaces, isometries, geodesics, First and Second Fundamental Forms, area on surfaces, Gauss-Bonnet Theorem, surfaces with constant negative curvature
Learning Outcomes	<ol style="list-style-type: none"> 1. Students will be able to articulate the fundamental concepts and theorems of Differential Geometry of curves and surfaces. 2. Students will be able to use and explain significance of the Gauss Theorem Egregium, the Gauss formula, the Gauss-Bonnet Theorem and the other major results of Differential Geometry, to connect a visual and intuitive content with analytic expressions. 3. Students will be able to calculate the First and Second Fundamental forms, the Christoffel Symbols and to derive the Weingarten and Peterson-Mainardi-Codazzi equations
Required Texts & Materials	<i>Will be prepared by the Instructor</i>
Suggested Texts, Readings, & Materials	<i>"Elements of Differential Geometry"</i> by R. Millman, G. Parker <i>"Elementary Differential Geometry"</i> by A. N. Pressley Additional reading materials will also be provided by the instructor.

Assignments (general rules)

Assignment will be given on a regular basis. Each one of them is going to have a specific deadline. Students are expected to work on each assignment individually and turn it by the specified deadline. Students are strongly encouraged to work more than the class assignments.

Exams (general rules)

All students are expected to take the examinations at the announced time. Students are required to inform the instructor of suspected honor code violations. Show all details of your work for each problem you solve during exams (unsupported answers will receive little or no credit). The class assignments will be returned to you as soon as possible. Any document not picked up by the end of finals week will be destroyed. Graded exams will not be returned to the students but the final exam will be held for review for one year.

Important Dates

1/30	Last day to drop a class without a "W"
2/26	"WL" withdrawal period begins (signature required)
4/1	Last day to withdraw with "WL"

**Please check comet calendar for signature procedures.*

Tentative Schedule (subject to change)

Weeks	Topics	Course materials
1-3	Introduction: What is Differential Geometry? Smooth curves; Curvature and torsion of the curve.	Chapters 1 and Chapter 2 <i>Lecture Notes</i> by the Instructor.
4-6	Examples of curves; Elementary surfaces, tangent space, maps between surfaces; The first quadratic form, area on a surface, isometries	Chapter 3
7-10	The Second quadratic form; curvature of a surface; Examples of surfaces: Surfaces of revolution, of a constant curvature, Beltrami surface Catenoid, Helicoid, Ruled surfaces, Developable	Chapter 4
11-14	Christoffel Symbols, Weingarten equations, the Gauss Theorema Egregium; Gauss formula, Peterson-Mainardi-Codazzi equations; Gauss-Bonnet Theorem; Geodesics; Vector fields and differential forms.	Chapter 5 and Handouts
15	Review	Handouts

Midterm Exam	1:00p.m, Tuesday, Feb. 28
Final Exam	1:00p.m, Thursday, May 2

*Students are responsible for all announcements made by the instructor concerning changes in the schedule for the class.

Grading Policy

40%	Homework assignments (The worst one will be dropped.)
30%	Midterm exam
30%	Final exam

Grade Scale

[97.6, 100] → A+	[93.3, 97.6) → A	[90, 93.3) → A-
[86.6, 90) → B+	[83.3, 86.6) → B	[80, 83.3) → B-
[76.6, 80) → C+	[73.3, 76.6) → C	[70, 73.3) → C-
[66.6, 70) → D+	[63.3, 66.6) → D	[60, 63.3) → D-
[0, 60) → F		

Assignments Policies and Classroom Citizenship

Late Work and Special Assignments	Occasionally there may be an assignment that is to be completed outside the classroom. Any such assignment will have a specific deadline. Failure to meet the deadline will result in a 25% reduction per each 12 hours late, of the point value for the assignment.
Class Attendance	Attendance is mandatory. Attendance for exams is mandatory.
Classroom Citizenship	Any action which disturbs your classmates or interrupts the lecture is unacceptable. <i>Examples of such actions include the following:</i> 1. Entering the classroom late. Please be punctual. 2. Leaving the classroom before the end of lecture. 3. Consuming of food and drinks. 4. Cell phones, ringers, etc., need to be turned off unless you are a member of an emergency response team.

Technical Support

If you experience any problems with your UTD account you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.

Student Conduct and Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Copyright Notice

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials, including music and software. Copying, displaying, reproducing, or distributing copyrighted works may infringe the copyright owner's rights and such infringement is subject to appropriate disciplinary action as well as criminal penalties provided by federal law. Usage of such material is only appropriate when that usage constitutes "fair use" under the Copyright Act. As a UT Dallas student, you are required to follow the institution's copyright policy (Policy Memorandum 84-I.3-46). For more information about the fair use exemption, see

<http://www.utsystem.edu/ogc/intellectualproperty/copypo12.htm>

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of

the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grades

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:

The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments

may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

Field Trip Policies / Off-Campus Instruction and Course Activities

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean.

These descriptions and timelines are subject to change at the discretion of the Instructor.