

COURSE SPECIFICATION

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	Course Title	Differential Geometry
2.	Originating Department	Department of Mathematics
3.	Course Code	MA327
4.	Credit Value	3
5.	Course Type	Major Elective Courses
6.	Semester	Spring
7.	Teaching Language	English
8.	Instructor(s), Affiliation & Contact For team teaching, please list all instructors	LI Zhan Department of Mathematics lizhan@sustech.edu.cn YANG Liuqing Department of Mathematics yanglq@sustech.edu.cn ZHU Yifei Department of Mathematics zhuyf@sustech.edu.cn
9.	Tutor/TA(s), Contact	To be announced
10.	Maximum Optional Enrolment	

11.	Delivery Method		/ /	/	()	
		Lectures	Tutorials	Lab/Practical	Other Please specify	Total
	Credit Hours	45				45

12.	Pre-requisites or Other Academic Requirements	A MA201a Ordinary Differential Equations A (MA201a)
13.	Courses for which this course is a pre-requisite	Algebraic Curves (MAT7057) Differentiable Manifolds (MAT8005)
14.	Cross-listing Dept.	

SYLLABUS

15. Course Objectives

Introduce the basic theory of curves and surfaces in 3-space, including the notion of differentiable manifolds.

16. Learning Outcomes

Students should acquire knowledge of the basic theory of curves and surfaces in 3-space, e.g., curvature, the first and second fundamental forms for surfaces;

Be familiar with basic examples of curves and surfaces, as well as calculations of principal and Gaussian curvatures;

Understand basic aspects of the intrinsic geometry of surfaces;

Understand the notion of differentiable manifolds as a generalization of curves and surfaces.

17. Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

Curves in plane and in space (2 lectures)

Curvature and torsion (2 lectures)

Global properties of curves (1 lecture)

Surfaces in three dimensions (2 lectures)

Examples of surfaces (1 lecture)

The first fundamental form (2 lectures)

Curvature of surfaces (2 lectures)

Gaussian, mean and principal curvatures (4 lectures)

Geodesics (2 lectures)

Gauss's Theorema Egregium (2 lectures)

The Gauss-Bonnet Theorem (1 lecture)

Differentiable manifolds (1 lecture)

18. Textbook and Supplementary Readings

Textbook

M.P. do Carmo, Differential geometry of curves and surfaces, Prentice-Hall

Reference

ASSESSMENT

19.

Type of Assessment	Time	% of final score	Penalty	Notes
Attendance				
Class Performance				
Quiz				
Projects				
Assignments		40		Weekly problem sets, with a grader
Mid-Term Test		30		Closed-book
Final Exam		30		Closed-book
Final				

Presentation

**Others (The
above may be
modified as
necessary)**

20.

GRADING SYSTEM

A.	Letter Grading
B.	/ Pass/Fail Grading

REVIEW AND APPROVAL

21.

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This Course has been approved by the following person or committee of authority

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