

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

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.	课程名称 Course Title	微分几何 Differential Geometry
2.	授课院系 Originating Department	数学系 Department of Mathematics
3.	课程编号 Course Code	MA327
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	英语 English
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	李展 LI Zhan 数学系 Department of Mathematics lizhan@sustech.edu.cn 杨柳青 YANG Liuqing 数学系 Department of Mathematics yanglq@sustech.edu.cn 朱一飞 ZHU Yifei 数学系 Department of Mathematics zhuyf@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	45				45

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	常微分方程 A (MA201a) Ordinary Differential Equations A (MA201a)
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	代数曲线 Algebraic Curves (MAT7057) 微分流形 Differentiable Manifolds (MAT8005)
14. 其它要求修读本课程的学系 Cross-listing Dept.	

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

介绍空间中曲线和曲面的基本理论，并介绍微分流形的基本定义。

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

16. 预达学习成果 Learning Outcomes

- 学生能了解空间曲线和曲面的基本理论，如曲率、曲面的第一和第二基本型；
- 知道曲线和曲面的基本例子，会计算其主曲率和高斯曲率；
- 了解曲面基本的内蕴几何学；
- 对作为曲线和曲面推广的微分流形的概念有一个基本的了解。
- 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. 课程内容及教学日历 (如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人)

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. 教材及其它参考资料 Textbook and Supplementary Readings

教材 Textbook

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

参考书 Reference

- 陈维桓, 微分几何初步, 北京大学出版社

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments		40		每周作业, 设置助教批改 Weekly problem sets, with a grader
期中考试 Mid-Term Test		30		闭卷 Closed-book
期末考试 Final Exam		30		闭卷 Closed-book
期末报告 Final				



Presentation

其它（可根据需要
改写以上评估方
式）

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

20. 记分方式 **GRADING SYSTEM**

- A. 十三级等级制 **Letter Grading**
 B. 二级记分制（通过/不通过） **Pass/Fail Grading**

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过

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

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