

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	MAT7076 代数曲线 Algebraic Curves
2.	课程性质 Compulsory/Elective	选修 Elective
3.	课程学分/学时 Course Credit/Hours	3 学分/48 学时
4.	授课语言 Teaching Language	英文 English
5.	授课教师 Instructor(s)	胡勇 Hu Yong
6.	是否面向本科生开放 Open to undergraduates or not	是 Yes
7.	先修要求 Pre-requisites	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) MA323 拓扑学 Topology, MAT8020 抽象代数 II Abstract Algebra II
8.	教学目标 Course Objectives	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 介绍代数几何的基本概念和基本研究方法和工具。引入层的上同调, 详细讲述代数曲线, 特别是平面代数曲线的基本知识。如有时间, 还计划讲述与黎曼曲面之间的联系。 The course will introduce basic concepts and fundamental methods and tools in algebraic geometry. Main topics covered include sheaves and their cohomology and basic theory of algebraic curves, especially plane algebraic curves. If time permits, we will also talk about relationship with the theory of Riemann surfaces.
9.	教学方法 Teaching Methods	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.) 理论课程, 课堂讲授为主。 This is a theoretical course, taught by classroom lectures.
10.	教学内容 Course Contents	(如面向本科生开放, 请注明区分内容。 If the course is open to undergraduates, please indicate the difference.)
	Section 1	仿射代数集 Affine algebraic sets
	Section 2	射影代数集 Projective algebraic sets
	Section 3	层论 Sheaf theory
	Section 4	代数簇 Algebraic varieties

Section 5	维数理论 Dimension theory
Section 6	切空间和奇点 Tangent spaces and singular points
Section 7	层的上同调 Cohomology of sheaves
Section 8	亏格与 Riemann-Roch 定理 Genus and Riemann-Roch theorem
Section 9	有理映射 Rational maps
Section 10	几何亏格 Geometric genus
Section 11	有理曲线 Rational curves
Section 12	其他专题 Other topics
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11. 课程考核
Course Assessment

(① 考核形式 Form of examination; ②. 分数构成 grading policy; ③ 如面向本科生开放, 请注明区分内容。
If the course is open to undergraduates, please indicate the difference.)

- (1) 考试, 十三级等级记分制; Written exam, letter grading
(2) 分数构成: 平时作业 20%; 课程报告 30%; 期中考试: 20%, 期末考试: 30%
Grading policy: homework 20%; project/presentation 30%; midterm 20%, final exam: 30%

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

教材 Textbook:

教师自编讲义 Lecture notes by the instructor

其他参考资料 Supplementary readings:

Daniel Perrin, Algebraic Geometry: an introduction, Springer, 2008, ISBN: 978-1-84800-055-1 e-ISBN: 978-1-84800-056-8

W. Fulton, Algebraic curves: an introduction to algebraic geometry, ISBN: 201510103, 9780201510102, online version available at <http://www.math.lsa.umich.edu/~wfulton/CurveBook.pdf>