

课程大纲 COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	MAT7059 代数与数论专题 Topics in Algebra and Number Theory
2.	课程性质 Compulsory/Elective	专业选修课 Major Elective Courses
3.	课程学分/学时 Course Credit/Hours	3 学分/48 学时
4.	授课语言 Teaching Language	中英文 Chinese and 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	<p>(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.)</p> <p>MA209-16 初等数论、MA214 抽象代数抽象代数或 MA219 抽象代数(H) MA209-16Elementary number theory, MA214Abstract Algebra or MA219Abstract Algebra (H)</p>
8.	教学目标 Course Objectives	<p>(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.)</p> <p>课程内容可能根据每次授课的面向学生情况略微调整。主要目标是向学生介绍代数、数论或算术几何方向的一些重要研究课题。通过本课程的学习, 学生应当能够掌握这些研究方向的现代前沿知识, 逐步具备相关专业的科学研究能力。</p> <p>The contents of this topic course may differ slightly in different years when the course is offered. The main objectives will be to discuss several most important research topics in algebra, number theory or arithmetic geometry. After taking this course, students are expected to gain a modern knowledge of frontiers in these research areas, and get better prepared to future research in related topics.</p>
9.	教学方法 Teaching Methods	<p>(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.)</p> <p>理论课程, 课堂讲授为主。 This is a theoretical course, taught by classroom lectures.</p>
10.	教学内容 Course Contents	<p>(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.)</p>
	Chapter 1	Arithmetic over finite fields

Chapter 2	Discrete valuations and local fields
Chapter 3	Dedekind domains and number fields
Chapter 4	Fundamental theorems in algebraic number theory
Chapter 5	Introduction to class field theory
Chapter 6	Arithmetic of quadratic forms over fields
Chapter 7	Integral theory of quadratic forms
Chapter 8	Other topics
11. 课程考核 Course Assessment	
	<p>(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.)</p> <p>(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%</p>
12. 教材及其它参考资料 Textbook and Supplementary Readings	
	<p>教材 Textbook: 教师自编讲义 Lecture notes by the instructor</p> <p>其他参考资料 Supplementary readings:</p> <p>K. Ireland and M. Rosen, A classical introduction to modern number theory, 2nd edition, J.-P. Serre, A course in arithmetic, O. T. O'Meara, Introduction to quadratic forms, Elman, Karpenko and Merkurjev, The algebraic and geometric theory of quadratic forms, T.Y. Lam, Introduction to quadratic forms over fields</p>