课程大纲
COURSE SYLLABUS

1.	**课程代码/名称** **Course Code/Title**	**MAT7078** 置换群　Permutation Groups
2.	**课程性质** **Compulsory/Elective**	专业课 Elective Course
3.	**课程学分/学时** **Course Credit/Hours**	3/48
4.	**授课语言** **Teaching Language**	中英双语　English & Chinese
5.	**授课教师** **Instructor(s)**	周慧
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.） MA214 抽象代数　Abstract Algebra

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.）

让学生熟练掌握置换群论的基本知识、方法，及其主流问题和重要问题；通过学习本原群拟本原群的分类定理，了解该领域的发展趋势。学生学习内容包括有置换群与对称性、本原置换群、拟本原置换群、多重传递群以及置换群与单群。

Students are supposed to understand basic knowledge and methods of permutation group theory, as well as their mainstream and important problems. Students can also understand the development tendency of permutation group theory by learning the classification of primitive permutation groups and quasi-primitive permutation groups. The main content includes permutation groups and symmetries, primitive permutation groups, quasi-primitive permutation groups, multiply transitive groups and simple groups.

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.）

教师讲授，课堂讨论。
Lectures by instructors, in-class discussions.

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	The Basic Ideas
Section 2	Examples and Constructions
Section 3	The Action of a Permutation Group
Section 4	The Structure of a Primitive Group
Section 5	Bounds on Orders of Permutation Groups

	Section 6	The Mathieu Groups and Steiner Systems
	Section 7	Multiply Transitive Groups
	Section 8	The Structure of the Symmetric Groups

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.）

课堂小测验/Quizzes 16%;
课后作业/Homeworks 20%;
期中考试/Midterm Exam 28%;
期末考试/Final Exam 36%.

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

Permutation Groups, GTM 163, by John D. Dixon and Brian C. Mortimer, 1996.

Permutation Groups, LMSST 45, by Peter J. Cameron, 1999.

Finite Permutation Groups, by Helmut W. Wielandt, 1964.

An Introduction to the Theory of Groups, GTM 148, by Joseph J. Rotman, 1995.

Martin W. Liebeck, Cheryl E. Praeger, Jan Saxl, **On the O'Nan-Scott theorem for finite primitive permutation groups**, J. Austral. Math. Soc. Ser. A 44 (1988), no. 3, 389–396.

Cheryl E. Praeger, **An O'Nan-Scott theorem for finite quasiprimitive permutation groups and an application to 2-arc transitive graphs**, J. London Math. Soc. (2) 47 (1993), no. 2, 227–239.