南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

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**	**傅立叶分析讨论班 Fourier Analysis Seminar**
2.	**授课院系 Originating Department**	数学系 Mathematics
3.	**课程编号 Course Code**	MA340
4.	**课程学分 Credit Value**	1
5.	**课程类别 Course Type**	专业选修课 Major Elective Courses
6.	**授课学期 Semester**	秋季 Fall
7.	**授课语言 Teaching Language**	中英双语 English & Chinese
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）**	刘博辰 数学系 liubc@sustech.edu.cn Bochen Liu Department of Mathematics liubc@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	32				

12.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无
13.	后续课程、其它学习规划 Courses for which this course is a pre-requisite	
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

课程将为学生详细介绍傅立叶级数和傅立叶变换的定义、性质，和其在相关学科中的应用。希望通过本课程的学习提高学生的数学修养，为后续的数学学习打下坚实的分析基础。

We plan to give a detailed introduction to Fourier series, Fourier transform, and their applications in related disciplines. It can develop students' mathematical maturity and help their later study on higher-level Mathematics.

16. 预达学习成果 Learning Outcomes

通过学习，学生能够熟练掌握傅立叶分析的基础性质，并熟练使用相关定理解决问题，同时能够理解傅立叶分析在微分方程、数论中的一些应用。

After attending this course students are expected to have a good understanding of basic properties of Fourier analysis, have the ability to use related theorems to solve problems, and get to know the applications in differential equations and number theory.

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.)

Chapter 1 The Genesis of Fourier Analysis (4 credit hours) 傅立叶分析的起源（4 学时）

Chapter 2 Basic Properties of Fourier Series (4 credit hours) 傅立叶级数的基本性质（4 学时）

Chapter 3 Convergence of Fourier Series (4 credit hours) 傅立叶级数的收敛性（4 学时）

Chapter 4 Some Applications of Fourier Series (4 credit hours) 傅立叶级数的一些应用（4 学时）

Chapter 5 The Fourier Transform on **R** (4 credit hours) **R** 上的傅立叶变换（4 学时）

Chapter 6 The Fourier Transform on $\mathbf{R}^d$ (4 credit hours) $\mathbf{R}^d$ 上的傅立叶变换（4 学时）

Chapter 7 Finite Fourier Analysis (4 credit hours) 有限傅立叶分析（4 学时）

Chapter 8 Dirichlet's Theorem (4 credit hours) Dirichlet 定理（4 学时）

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

Fourier Analysis, An Introduction, by Elias M. Stein and Rami Shakarchi

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		40		
课堂表现 Class Performance		60		
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
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

教学负责人签字： **日期：**