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**	**现代计算数学高级专题 Advanced Topics in Modern Computational Mathematics**
2.	**授课院系 Originating Department**	**数学系**
3.	**课程编号 Course Code**	MA339
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**	春季 Spring / 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）**	吴开亮，数学系，副教授 慧园 3 栋 525 WU Kailiang, Department of Mathematics, Associate Professor Room 525, Block 3,Wisdom Valley
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	无 NA / 待公布 To be announced / 已确定的实验员/助教联系方式 Please list all Tutor/TA(s) **（请保留相应选项 Please only keep the relevant information）**
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				32

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	数学分析 III(MA203a)(或数学分析精讲（MA213）) Mathematical Analysis III (MA203a) (or Real Analysis (MA213))
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.	数学系

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程的目标受众是有相关背景和扎实基础的优秀本科生和研究生。课程目标是涵盖一些当代的计算数学问题，特别是与科学计算、微分方程数值解、机器学习、计算流体力学等相关的基本数学问题和方法。

The targeted audience of this course is advanced well-prepared undergraduate students and graduate students. The

purpose is to cover a few contemporary computational mathematics issues, especially some fundamental mathematical problems and methods related to scientific computing, numerical methods for differential equations, machine learning, and computational fluid dynamics.

16. 预达学习成果 Learning Outcomes

预达学习成果: 掌握现代计算数学中的一些基本工具和方法。

Acquaintance with a few fundamental tools and methods in modern computational mathematics.

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.)

Calendar (Can be adjusted based on student learning and current applied math development)

1: Data-driven modeling and machine learning(8H)

2: Structure-preserving numerical methods(8H)

3: Computational fluid dynamics(8H)

4: student final presentation(8H)

1：数据驱动的建模和机器学习(8H)

2：保结构数值方法(8H)

3：计算流体力学(8H)

4：学生期末报告(8H)

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

Textbook： Notes from the instructor as well as recent papers published in premier journals

教材及其它参考资料： 自编及各类最新研究文献

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				
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)**		Presentation by the students both in terms of the mathematics and the communication skill (pass/fail grade) 评估的各项比例: 学生试讲效果包括数学和沟通能力（及格/不及格）		

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
