

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	计算金融 Computational Finance				
2.	授课院系 Originating Department	数学系 Department of Mathematics				
3.	课程编号 Course Code	MA216				
4.	课程学分 Credit Value	3				
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	根据学生的情况可以是英文、中文或者两者相结合。 English, Chinese, or both				
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)	李景治博士, 数学系 Dr. Jingzhi Li, Department of Mathematics				
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	To be announced 待公布				
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	50				
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	48				48

<p>12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements</p>	<p>概率论与数理统计 (MA212) 或者数理统计 (MA204), 线性代数精讲 Probability and statistics or mathematical statistics, Advanced Linear Algebra</p>
<p>13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite</p>	
<p>14. 其它要求修读本课程的学系 Cross-listing Dept.</p>	

教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

本课程帮助学生熟悉金融数学模型基本知识, 金融量化方法和计算分析技巧。
To introduce the knowledge of financial models, quantitative methods and computational analysis techniques.
To demonstrate the methodologies for financial simulation and evaluation.

16. **预达学习成果 Learning Outcomes**

修毕课程后, 学生可以:

- (a) 了解金融数学的基本概念;
- (b) 了解金融方面的计算工具;
- (c) 合理判断选择合适的计算模型来解决金融问题;
- (d) 进行金融模拟和分析;

Upon completion of the subject, students will be able to:

- (a) understand the fundamental concepts of financial math;
- (b) be aware of the computational tools for finance;
- (c) make reasonable judgment in choosing suitable computation model to solve problems in finance;
- (d) perform financial simulation and analysis;

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.)

Options, 1 units (3 HOURS)
Option valuation preliminaries, 2 units (6 HOURS)
Asset price model , 3 units (6 HOURS)
Black–Scholes PDE and simulations, 3 units (6 HOURS)
Greeks, 2 units (3 HOURS)
Implied volatility, 2 units (6 HOURS)
Monte Carlo and Binomial method, 2 units (6 HOURS)
American options, 2 units (6 HOURS)
Exotic options, 2 units (depends) (3 HOURS)
Historical volatility, 2 units (depends) (3 HOURS)

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

Mathematical Models of Financial Derivatives (2 ed.), Yue-Kuen Kwok Springer 世界图书出版公司 (2010-04)
Computational Finance, numerical methods for pricing financial instruments, Part II, George Levy, Butterworth-Heinemann, Elsevier, 2004

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		10%		
课堂表现 Class Performance				
小测验 Quiz		20%		
课程项目 Projects		30%		
平时作业 Assignments		10%		
期中考试 Mid-Term Test		15%		
期末考试 Final Exam		15%		
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)

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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

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