

课程大纲

COURSE SYLLABUS

1.	课程代码/名称 Course Code/Title	MAT7099 金融数学专题 Topic in Mathematical Finance
2.	课程性质 Compulsory/Elective	选修; Elective
3.	课程学分/学时 Course Credit/Hours	3/48
4.	授课语言 Teaching Language	中英文; Chinese & English
5.	授课教师 Instructor(s)	古嘉雯 Gu Jiawen
6.	是否面向本科生开放 Open to undergraduates or not	否; No
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.) 高等概率论、随机过程、实变函数、泛函分析; Modern Probability, Stochastic processes, Real Analysis, Functional Analysis.
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>此为金融数学的入门课程, 涵盖如布朗运动与随机积分、倒向随机微分方程、随机控制、连续时间金融市场、未定权益的定价理论、最优证券组合问题等基本知识。</p> <p>This is an entry level course of Mathematical Finance for graduates and senior undergraduates, covering basic knowledge about Mathematical Finance, such as Brownian motion, BSDE, stochastic control, financial market in continuous time, contingent claim pricing, and portfolio optimization problems.</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>Teach with blackboards and chalks.</p>	
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	连续鞅; Continuous-Time Martingales
	Section 2	布朗运动与随机积分; Brownian Motion and Stochastic Calculus
	Section 3	倒向随机微分方程; Backward Stochastic Differential Equations
	Section 4	随机控制; Stochastic Control

	Section 5	连续时间金融市场; Financial Market in Continuous Time
	Section 6	未定权益的定价理论; Contingent Claim Pricing
	Section 7	最优证券组合; Portfolio Optimization Problems
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>通过平时作业与小测结果考查</p>	
12.	教材及其它参考资料 Textbook and Supplementary Readings	
	<ol style="list-style-type: none"> 1. Karatzas, I. and Shreve, S. E. Brownian Motion and Stochastic Calculus, 2nd ed. Springer-Verlag, New York 2. Yong, J. and Zhou, X. Y. Stochastic Controls: Hamiltonian Systems and HJB Equations. Springer-Verlag, New York. 3. Pham, H. Continuous-time Stochastic Control and Optimization with Financial Applications. Springer-Verlag, Berlin, Heidelberg. 4. 雍炯敏, 刘道白. 数学金融学. 上海人民出版社, 上海. 	