

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	金融数学基础 Foundation of Financial Mathematics				
2.	授课院系 Originating Department	数学系 Department of Mathematics				
3.	课程编号 Course Code	MA224				
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	春季 Spring				
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)	杨燕, 数学系 第一教学楼 313 yangy3@sustc.edu.cn				
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	Grader: 李嘉贝 11612418@mail.sustc.edu.cn				
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	48			复习、考试 (2周) 6 Revision & Exam (2 weeks) 6-hours	48

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	概率论(或概率论与数理统计) Probability Theory(or Probability and Statistics)
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	寿险精算, 证券投资 Life Insurance Actuarial Science, Security Investments
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

本课程主要学习金融数学中的基本概念-利息理论，以及如何应用这些基本数学模型来刻画现金流分析和货币时间价值计算理论，并对金融数学的主要内容做初步介绍，为将来在相关领域的进一步学习打下坚实的基础。

To provide an understanding of the fundamental concepts of financial mathematics-the theory of interest, and to give a brief introduction to financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows as a basis for the future studies.

16. 预达学习成果 Learning Outcomes

通过本课程的学习，学生可以掌握以利息理论为主的金融数学基础知识，并为进一步深入系统地学习金融数学，精算学、以及相关领域的研究和应用打下坚实的基础,而且帮助学生通过精算师相关科目的考试。

After taking the course, the students should have a basic understanding of some basic concepts in financial mathematics including the theory of interest, and be well prepared for advanced studies in mathematical finance, actuarial science and other related fields. It also can help students to pass the related SOA Exams.

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.)

1. 利息基本计算：利息基本函数、利息基本计算(6 学时)

The measurement of interest: Various quantitative measures of interest

2. 年金：基本年金、广义年金、变化年金(8 学时)

Annuities: Basic annuities, General annuities, Varying annuities

3. 投资收益分析：基本投资分析、收益率计算、资本预算(6 学时)

Yield rates: Introduction to yield rates, Calculating Yield rates, Capital budgeting,

4. 本金利息分离技术：摊还法、偿债基金法、其他偿还方法(6 学时)

The breakdown of principal and interest payments: The amortization method, The sinking fund method and other methods

5. 固定收益证券：债券基本定价、广义债券定价与收益分析(6 学时)

<p>Fixed income securities: Price of bonds, Some generalizations</p> <p>6. 实际应用: 抵押贷款分析、固定资产折旧分析、资本化成本计算(7 学时)</p> <p>Practical Applications: Mortgage, Depreciation, Capitalized cost</p> <p>7. 利率风险分析: 利率期限结构、资产负债管理(6 学时)</p> <p>Interest risk: The term structure of interest rates, Asset and liability management</p> <p>8. 随机模型(3 学时)</p> <p>Stochastic models</p>

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

<p>参考教材 Textbook:</p> <p>金融数学引论(第二版), 吴岚, 黄海, 何洋波等编著, 北京大学出版社, 2013</p> <p>其他参考资料 Supplementary Readings:</p> <p>利息理论及其应用(第二版), 孟旺生编著, 中国人民大学出版社, 2014 年</p> <p>The Theory of Interest (Third Edition), Kellison, S.G., Irwin/McGraw-Hill ,2009</p> <p>Mathematical Interest Theory (Second Edition), Daniel, J.W., and Vaaler, L.J.F., The Mathematical Association of America, 2009</p>

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		10%		
课程项目 Projects		10%		
平时作业 Assignments		10%		

期中考试 Mid-Term Test	30%		
期末考试 Final Exam	40%		
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

