

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	固定收益产品 Fixed Income Securities				
2.	授课院系 Originating Department	金融系 Department of Finance				
3.	课程编号 Course Code	FIN306				
4.	课程学分 Credit Value	2				
5.	课程类别 Course Type	专业选修课 Major Elective Course				
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)	杨招军，副教授，金融系 Zhaojun YANG, Associate Professor, Department of Finance 邮箱/Email: yangzj@sustech.edu.cn 办公室/office: 慧园 3 栋 318, Wisdom Valley 3-318				
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	30	2	0	2 hours for final exams	32

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	概率论相关课程 Probability or some course like this
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**

Why we study fixed income securities? Two-thirds of the market value of all securities that are outstanding in the world are classified as fixed income securities. A good understanding of theories and tools of fixed income securities is necessary for (1) practical valuation of fixed income assets and (2) corporate financial decisions. In this course the concepts, tools and techniques used to price fixed income securities and interest rate sensitive products at an advanced level are introduced and discussed. The concepts and tools are useful to managers who want to use these securities, whether for investing, hedging, market-making, or speculating.

为什么我们要研究固定收益证券？在世界上流通的所有证券中，三分之二的市值被归类为固定收益证券。本课程介绍固定收入证券及其他利率敏感型金融产品的定价的概念、原理和方法，这些知识有助于金融经营管理人员从事债券及其衍生产品的投资、风险对冲、市场营销和冒险投机的工作。

16. **预达学习成果 Learning Outcomes**

After the course study, the learners are expected be able to understand the concepts such as bonds, yield rates, forward rates, discount factors and so on. More importantly, they will learn how to price fixed income securities and manage the financial risk in trading fixed income securities. The pricing methods and risk management techniques including traditional and modern ones. 通过本课程的学习，学生会理解债券、收益率、远期利率、折扣因子等概念，尤其是掌握固定收益产品的定价技术和其风险管理方法，这些技术和方法即包括传统的计算，也包括现代的理论。

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.)

Course description: This course addresses approaches for understanding and analysing fixed income securities and interest rate options. It focuses on risk management, i.e., the arbitrage free pricing and hedging of fixed income securities. This is in contrast to the traditional focus of textbooks in this area. Traditional textbooks concentrated on the institutional setting of these markets. 本课程介绍固定收益证券和利率衍生期权的分析方法，重在介绍固定收益证券的无套利定价和风险对冲方法。传统的方法主要讲述固定收益市场的运行机制。

Course calendar:

Week Topics

- 1** Fixed-Income Securities—Overview: 1 Organization of Fixed Income Market; 2 Classification of Fixed-Income Securities; 3 A Snapshot Of Global Fixed Income Markets; 4 How fixed income differs from equities; 5 Course Syllabus (固定收益证券-概述; 固定收益市场结构; 分类; 全球市场快照; 与股权的差异; 课程纲要)
- 2** Basic Terminology, Concepts and Valuation: 1 Main problems for the players; 2 Various interest rates and arbitrage; 3 Zero-coupon and discount factor. (基本术语, 概念和定价)
- 3** Basic Terminology, Concepts and Valuation (ctd): 4 Implied forward rates and coupon bond yields; 5 Yield curves; 6 Short review using Tuckman-Serrat' s expositions. (基本术语, 概念和定价---续)
- 4** Returns, Spreads, and Yields: Short review on the first chapter of Tuckman-Serrat' s book; Short review on the second chapter of Tuckman-Serrat' s book; Returns; Spreads. (收益, 利差, 收益率)
- 5** Returns, Spreads, and Yields (ctd): Yield-to-Maturity. (收益, 利差, 收益率---续)
- 6** One-Factor Risk Metrics and Hedges: (单因素风险度量与风险对冲)
- 1 DV01
- 2 Duration
- 3 Convexity
- 4 A hedging application: a short convexity position
- 5 Estimating price changes and returns with DV01, duration, and convexity
- 6 Convexity in the investment and asset-liability management contexts
- 7 Measuring the price sensitivity of portfolios
- 8 Application: the barbell versus the bullet
- 7** Interest Rate Derivatives (利率衍生品)
- 1 The economy
- 2 Securities and Interest Rates
- 3 Forward contracts
- 4 Futures contracts
- 5 Option Contracts
- 8** The Evolution of the Term Structure of Interest Rates (利率期限结构演化)
- 1 Motivation
- 2 The One-Factor Economy

- 3 The Forward Rate Process
- 4 The Spot Rate Process
- 5 Consistency with Equilibrium

- 9 Trading Strategies, Arbitrage Opportunities, and Complete Markets Motivation; An example of trading strategies
Arbitrage opportunities Complete markets (交易策略, 套利机会, 完备市场, 例子)
- 10 Bond Trading Strategies –Theory: Motivation; The pricing and hedging of a claim; Risk-Neutral probabilities;
Risk-neutral valuation; Applications; Multiple factor economies (债券交易策略---理论)
- 11 How to Identify Whether a Bond Market Is Arbitrage-Free (如何识别债券市场是否是无套利的)

- 1 Motivation
- 2 The One-Factor Economy
- 3 Multiple Factor Economies

- 12 The HJM Model for Coupon Bonds: Motivation; A Coupon Bond as a Portfolio of Zero-Coupon (含息债券的
HJM 模型)
- 13 Bonds; A Coupon Bond as a Dynamic Trading Strategy; Risk-Neutral Valuation. (债券, 动态交易策略合成含
息债券; 风险中性定价)
- 14 The HJM Model for Coupon Bonds (ctd): Delta Hedging; Comparison of HJM Hedging versus Duration
Hedging. (含息债券的 HJM 模型---续)
- 15 The Continuous-Time HJM Model: Introduction; Terminology and notation; Term structure movements; The
HJM no-arbitrage drift restriction; Examples (连续 HJM 模型)
- 16 Review (复习)

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

- 1. Modeling fixed-income securities and interest rate options, Stanford University Press, 2002, written by Jarrow R. A.
- 2. Fixed Income Securities: Tools for Today's Markets 3rd Edition by Tuckman, Bruce Serrat Angel, 2012

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		20		
课堂表现 Class Performance		5		
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments		15		
期中考试 Mid-Term Test				
期末考试 Final Exam		60		
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

金融系课程规划与审核委员会
Curriculum Planning and Review Committee, Dept. of Finance