UNIVERSITI TEKNOLOGI MARA

ASC714: VALUATION AND RISK MANAGEMENT OF FIXED INCOME SECURITIES

Course Name (English)	VALUATION AND RISK MANAGEMENT OF FIXED INCOME SECURITIES APPROVED
Course Code	ASC714
MQF Credit	3
Course Description	Interest rate derivatives play a central role in modern financial markets. Traditionally we think of a derivative security as a security whose value depends on the value of some other basic security. The traditional view was fine at the time it was introduced in the 1970s and 1980s. Nowadays, however, the market size of interest rate derivatives is much larger than the market of primary securities. This course explores key issues in understanding fixed income instruments. It especially develops tools for valuing and modelling risk exposures of fixed income securities and their derivatives. To make the material broadly accessible, concepts are, whenever possible, explained through hands-on applications and examples rather than through advanced mathematics. Never-the-less, the course is highly quantitative and it requires good background in finance and statistical analysis as well as adequate analytical skills.
Transferable Skills	Analytical skills in solving the financial problems using advanced mathematics and statistical analysis
Teaching Methodologies	Lectures, Case Study, Discussion
CLO	CLO1 Illustrate fixed income market and the basics of fixed income securities CLO2 Describe the financial risks that the fixed income securities are exposed to and its management using derivative instruments CLO3 Demonstrate excellent ability to self-learn the derivative instruments using various pricing theories
Pre-Requisite Courses	No course recommendations

Topics
1. Introduction to the Dynamic Financial System in a Global Economy 1.1) • Types and Classes of Assets 1.2) • Classification of Financial Markets 1.3) • Globalization of Financial Markets 1.4) • The International Framework In Developed And Emerging Markets 1.5) • Structure of Financial System 1.6) • The Role of Markets in the Financial System 1.7) • Institutional Structure 1.8) • Intermediation and Disintermediation of Funds 1.9) • Factors Affecting the Financial System in the Future
2. An Introduction to Risk Management 2.1) • Introduction to Risk Management 2.2) • Evolution of Risk Management 2.3) • Risk Management Process 2.4) • Regulatory and Reporting of Aspects of Risk Management
3. An Introduction to Fixed Income Market 3.1) • The Complexity Of Fixed Income Markets 3.2) • No Arbitrage And The Law Of One Price 3.3) • The Government Debt Market 3.4) • The Money Market 3.5) • The Repo Market 3.6) • The Mortgage Backed Securities Market and Asset Backed Market 3.7) • The Derivative Market

4. Basics of Fixed Income Securities 4.1) • Discount Factors 4.2) • Interest rates 4.3) • The Term Structure of Interest Rates 4.4) • Coupon Bonds 4.5) • Floating Rate Bonds
5. Basics of Interest Rate Risk Management 5.1) • The Variation in Interest Rates 5.2) • Duration 5.3) • Value at Risk 5.4) • Expected shortfall 5.5) • Cash-flow matching and Immunization 5.6) • Asset Liability Management
6. Basic Refinement in Interest Rate Risk Management 6.1) • Convexity 6.2) • Slope and Curvature 6.3) • Case Study
7. Interest Rate Derivatives: Forwards and Swaps 7.1) • Forward Rates and Forward Discount Factors 7.2) • Forward Rate Agreements 7.3) • Forward Contract 7.4) • Interest Rate Swaps 7.5) • Interest Rate Risk Management using Derivative Securities
8. Interest Rate Derivatives 8.1) • Interest Rate Futures 8.2) • Option as Insurance Contract 8.3) • Options Strategies 8.4) • Put-Call Parity
9. American Options 9.1) • Callable Bonds 9.2) • American Swapations 9.3) • Mortgages and Residential Mortgage Backed Securities
10. Term Structure of Models 10.1) • One-Step Binomial Trees 10.2) • Multi-Step Binomial Trees 10.3) • Risk Neutral Trees and Derivative Pricing
11. Monte Carlo Simulation on Trees 11.1) • Monte-Carlo Simulation on One-Step Binomial Tree 11.2) • Monte-Carlo Simulation on Multi-Step Binomial Trees 11.3) • Pricing Path Dependent Solution 11.4) • Spot Rate Duration by Monte-Carlo Simulation 11.5) • Pricing Residential Mortgage Backed Securities

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Final Test	Final Assesment_in written	15%	CLO1
Final Test	Final Assesment _written	15%	CLO2
Group Project	Group Project 2- Mini Project and presentation	50%	CLO3
Test	Written Test 2	10%	CLO2
Test	Written test	10%	CLO1

Reading List

Recommended Text

- **Pietro Veronesi 2016, *Handbook of Fixed-Income Securities*, 1 Ed., John Wiley & Sons [ISBN: 1118709195]**
- **Pietro Veronesi 2010, *Fixed Income SecuritiesValuation, Risk, and Risk Management*, 1 Ed., John Wiley & Sons [ISBN: 0470109106]**

Reference Book Resources

- **Frank J. Fabozzi 2007, *Fixed Income Analysis*, 2 Ed., Wiley [ISBN: 047005221X]**
- **Frank J. Fabozzi 2014, *Bond Markets, Analysis, and Strategies*, 9 Ed., Prentice Hall [ISBN: 0133796779]**
- **John C. Hull 2017, *Options, Futures, and Other Derivatives*, 10 Ed., Pearson [ISBN: 013447208X]**
- **Frederic S. Mishkin 2015, *Economics of Money, Banking and Financial Markets, The, Business School Edition*, 4 Ed., Prentice Hall [ISBN: 0133859800]**
- **Peter Rose, Milton Marquis 2005, *Money and Capital Markets + Powerweb: Ethics in Finance + S&P Bind-In Card (McGraw-Hill/Irwin Series in Finance, Insurance, and Real Est)*, 9 Ed., McGraw-Hill/Irwin; 9 edition (March 1, 2005) [ISBN: 0073132616]**

Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources