

Institute : **Xavier Institute of Management, Bhubaneswar**

Course Title : **FISM: FIXED INCOME SECURITIES MARKETS**

Credits: **THREE** **Area:** **FINANCE & ACCOUNTING**

Course Instructors:

Instructor 1	DR. GOLAKA C NATH	E-mail	golak.nath@hotmail.com
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Course Objectives: Effective risk management is essential in today's uncertain business environment. Derivatives and especially fixed income derivatives are standard instruments for managing financial risk. More than 90% of the World's largest 500 companies use fixed income derivatives to manage interest rate risk exposure. For global Banks, Fixed Income portfolio consists of a major portion of their assets in Balance sheet. While vanilla fixed- for-floating swap contracts are by far the most common fixed income derivative, financial engineers keep inventing new fixed income derivatives to help firms transfer risks more effectively and selectively. It is critical for anyone involved in corporate or financial risk management to have a deep-rooted understanding of interest rate risk and fixed income securities.

This course explores key issues in fixed income. It develops tools for valuing and modeling the risk exposures of fixed income securities and their derivatives, with the ultimate goal of deploying these instruments in a corporate or financial risk management setting. The course is divided into two parts, covering (1) basic fixed income securities and (2) fixed income derivatives. To make the material broadly accessible, concepts are, whenever possible, explained through hands-on applications and examples, rather than through advanced mathematics.

This course covers the mathematical foundation for studying fixed income securities and markets. It emphasizes traditional bond and term structure concepts crucial to understanding the functioning of these markets. Development of analytical skills for properly valuing fixed income securities. Bond pricing, discount factors, yields, and arbitrage; spot rates, forward rates, interest rate term structure and yield curve; one-factor measures of price sensitivity; key rate, bucket exposure, and regression-based hedging.

Prescribed Texts:

Choudhury, Moorad, 2010, Bond and Money Markets: Strategy, Trading, Analysis [Paperback], Indian Edition

Pietro Veronesi, 2010, Fixed Income Securities, Valuation, Risk, And Risk Management (Wiley India)

Additional References:

(1) Martinelli, Lionel; Stephane, Martellini, Lionel & Priaulet, Philippe & Priaulet,; Kilmer,

W. Otie, 2010, Fixed Income Securities: Valuation, Risk Management and Portfolio Strategies

(2) Bruce Tuckman, 2002, Fixed Income Securities: Tools for Today's Markets (2nd edition), John Wiley & Sons, Inc.

(3) Frank J. Fabozzi, 2007, *Fixed Income Analysis* (2nd edition), McGraw-Hill Companies, Inc. (for CFA)

(4) Frank J. Fabozzi, 2005, *Fixed Income Mathematics: Analytical and Statistical Techniques* (4th edition), McGraw-Hill Companies, Inc.

(5) Kenneth D Garbade, 1998, Fixed Income Analysis, MIT Press

Pedagogy:

The course employs videos, cases and problems as well as classroom lectures and discussions and a bond portfolio management trading assignment and auction participation assignment and a market dealt swap exercises. We will make use of international as well as domestic examples. Each student will be expected to participate actively in class discussion. Virtual market conditions are created in the class room for better understanding.

	Component	Weightage	Description
1	Mid Term Examination	0	No Mid-term examination
2	End Term Examination	35%	Close Book
3	Quiz (announced or unannounced)	30%	3 Quizzes will be conducted – This will be done on 2nd/3rd and 4th visit of the faculty
4	Project Assignments	20%	Two assignments – 8% and 12% - submission in standard format. All assignment to be submitted to golak.nath@hotmail.com only.
5	Excel based Examination	15%	Excel based test will be conducted during last visit of faculty
6	Oral Examination	0	
7	Take home Assignments/Tutorials	0	

Grade Conversion:

We currently use a standardized grading policy for Fixed Income Markets Course. That is, the proportion of A's, B's, C's, etc must adhere to general guidelines. Specifically, the policy is:

- A's Maximum of 25%
- C's Range of 20% to 40%
- D's and F's combined: Expected minimum of 10%, but could be 0%.

The Median score will be graded B+. Other scores will accordingly be set to adhere to the above principle. However, anyone scoring 85% or more will get A+. Anyone score less than 35% can expect to get F grade.

The policy is employed to insure that (i) the grade of A is reserved for outstanding performance, and (ii) any student who performs poorly will receive a D or F. If all students perform well, no D's or F's will be given.

The phrase "Expected minimum of 10%" is used in the "D's and F's" category because history has shown that approximately 10% to 20% of the class typically underperforms. However, the 10% minimum is a "soft" target. That is, if the entire class performs well, then the number of D's and F's will be 0%. Of course, if there are a large number of poor performing students, then the combined number of D's and F's can exceed 10%. Historically, students have not scored marks to fall into this category but it can not be ruled out.

Topics to be covered

Session-wise plan:

1. Session 1 and 2:
 - a. Introduction to Fixed Income Securities Market
 - i. Monetary Policy and Its effect on Bond Market
 - ii. Policy Developments
 - iii. Products
 - iv. Platforms and Systems
 - v. Information availability
 - vi. Processing Market Information
 - vii. Global Bond Markets
 - viii. Global Debt Crisis of 2008 – 2012
 - ix. Greece Bond CDS –Lessons to learn
 - x. Case Analysis – Impact of Recent Monetary Policy on Bond Market
 - xi. Role of CCP
 - xii. Basel II and Risk Capital Changes in Bank Balance Sheets
 - xiii. Rating Agencies and Sovereign Debt
 - xiv. Corporate Bond Market
2. Session – 3 and 4:
 - a. The Primary Market (Students would participate in mock Auction process which will replicate the actual Auction of a Dated Security which will fall during the Course teaching time)
 - i. Issuance Needs and Issuance Policy
 - ii. Auctions
 - iii. Rollovers
 - iv. When Issued Market
 - v. Empirical Analysis
 - vi. Consolidation of Debt and its impact on Liquidity
3. Session 5:
 - a. Time Value of Money
 - i. Compounding Rules
 - ii. Market Conventions
 - iii. International Market Quotations
4. Session 6:

- a. Fixed Income Valuation
 - i. Valuation of Bonds
 - ii. Liquidity Premium
 - iii. Estimating Probability of Default of a Risky Bond
- 5. Session 7, 8 and 9:
 - a. Understanding Market Anomalies
 - b. Term Structure of Interest Rate
 - i. Interpreting Yield Curve
 - ii. Basics of Term Structure Modeling
 - iii. YTM Curve
 - iv. Zero Coupon Yield Curve through Models
 - v. Bootstrapping to derive the Spot Curve
 - vi. Benchmark Yield Curve
 - vii. Binomial Lattice
 - viii. Using Risk Neutral Trees and Derivative Pricing
- 6. Session 10 and 11:
 - a. Fixed Income Market Risk Analysis
 - i. Bond Sensitivity of Interest rate
 - ii. Duration estimation
 - iii. Convexity estimation
 - iv. Convexity Gain
 - v. Duration and Convexity of an Embedded Option Bond
 - vi. Impact of Negative Convexity
 - vii. PV01 and its impact on portfolio strategy
 - viii. Treasury Trading Strategies (Ref: Moorad Choudhury)
 - 1. Approaches to Trading and Hedging
 - 2. Relative Value Trading using Government Bonds
 - ix. Option embedded Bonds
 - x. Trading & Hedging
- 7. Session 12 and 13:
 - a. Fixed Income Derivatives
 - i. Futures (Hull)
 - 1. 91DAY TB Futures
 - 2. Long Bond Futures
 - ii. Contract Specification
 - iii. Conversion Factors
 - iv. Cheapest to Deliver Concept
 - v. Hedging with Bond Futures
 - b. Swaps and Option Basics
 - i. Interest Rate Swaps
 - ii. Forward Rate Agreements
 - iii. Other OTC Derivatives
 - c. Credit Derivatives
 - i. Understanding CDS spread
 - ii. Pricing a CDS using Black-Scholes-Merton Model
- 8. Session 14 and 15:
 - a. Fixed Income Repo Market
 - i. Why Repo is used as a Financing Option
 - ii. Classic Repo
 - iii. Buy and Sell back repo

- iv. Securities Lending
 - v. CBLO
 - vi. Repo 105 (Lehman Brothers)
- 9. Session 16 and 17:
 - a. VaR Basics and its use in Fixed Income Securities Market
 - i. VaR Concept
 - ii. Variance Covariance Method
 - iii. Historical Simulation
 - iv. Extreme Value Theory
- 10. Session 18 and 19 :
 - a. Benchmark Rates and Indices
 - i. MIBOR/CCBOR/LIBOR
 - ii. Bond Index
 - 1. Construction
 - 2. Rebalancing
 - 3. Maintenance
 - iii. Indexing Bond Portfolio
- 11. Session 20
 - a. Securitisation Process
 - i. SPV and PTC
 - b. Asset Backed Securities
 - c. Mortgage backed Securities

Communication Protocol:

I will be available in the campus on the days of my visits and can help students in case they need my support. We will use the class web site for most of the handouts: announcements, lecture notes, weekly homework assignments, etc. Email is probably the best way to ask questions. However, because it is not a way to communicate face-to-face, clarifying details via email causes delays. So, please try to be specific about the details when asking a question via email. During the lecture, if there is anything unclear to you, please raise a question immediately. In most cases, if time permits and the question is representative enough, I will answer it right away. Otherwise, I might defer it to after class or during after-class hours. However, no question is ever a bad question, and your every bit of effort in learning and inquiry is welcomed.

Quiz / Examination:

Quizzes will be conducted Electronically and students will be allowed to use Calculators including Financial Calculators. A blank spreadsheet will also be allowed to be opened for making calculations during the Quiz and End Term examinations.