Overview of the Course

The goal of the course is to become familiar with the theory and empirical evidence related to fixed income investment management. The course will describe the major players in the market, key institutions, broadempirical regularities, and analytical tools that are used for pricing and risk management. Some parts of the course will be fairly analytical while others will be largely institutional. Each session will be organized around one or two key chapters. In addition, class notes and articles will be used to supplement and clarify issues.

Course Objective:

The purpose of this course is to provide a sound working knowledge of fixed income markets. Much of what the students will learn is used in Treasuries of Banks and Institutions. Projects and case studies will be included to ensure better understanding of the subject matter.

Outline of Key Topics

• Overview of Debt Securities: What are debt securities? What are their sources of risk and return? Historical performance of fixed income securities.

• Major players and their functions: Banks, Reserve Bank of India (Central Bank of the Country), Primary Dealers, CCIL, Rating agencies, Sellside and Buy-side institutions.

• Major Intermediaries / Infrastructures: Repo markets, auction methods (single-price and multiple price auctions), Electronic networks, Voice-based intermediation, etc.

• Major stylized facts: a) cyclical behavior (mean-reversion) of interest rates, b) short-term yields are more volatile, c) credit spreads versus business cycles, d) relation between prepayments and swap spreads, e) flight to quality, Treasury yields and financing rates.

• Bond mathematics: a) price and yield conventions, b) PVBP, Duration (modified, effective and key-rate), convexity, and negative convexity. Trade applications: spread trades, and bullet versus barbell positions.

• Term Structure Theory: Spot rates, forward rates, par yields, modeling interest rates and pricing bonds.
- Structural models of default: Modeling credit risk, credit spreads and their behavior, Distance to default, forecasting rating changes, high-yield and investment-grade debt markets.
- Derivatives: Treasury futures, Interest Rate Swaps, and Single-name credit default swaps.

**Text Book**

**TENTATIVE COURSE OUTLINE**
Each Session is approximately 1.5 hours

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<td>1 and 2</td>
<td>Introduction to Fixed Income Securities Market</td>
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<td>Monetary Policy and Its effect on Bond Market</td>
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<td>Information availability</td>
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<td>Regulatory Requirements (Bank Balance Sheet Analysis)</td>
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<td>Primary Market</td>
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<td>Auctions including When Issued Market</td>
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<td>Funding Market Positions through Borrowing</td>
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<td>Repo and Short Sale</td>
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<td>Time Value of Money</td>
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<td>Compounding Rules</td>
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<td>International Market Quotations</td>
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<td>Fixed Income Valuation</td>
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<td>Understanding Market Anomalies</td>
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<td>Interpreting Yield Curve.</td>
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| 10         | Basics of Term Structure Modeling  
              YTM Curve versus Spot Curve  
              Zero Coupon Yield Curve through Models  
              Bootstrapping to derive the Spot Curve |
| 11         | Benchmark Yield Curves used in the Market  
              Forward Curve  
              Term Structure Models  
              Binomial Lattice |
| 12         | Fixed Income Market Risk Analysis  
              Bond Sensitivity of Interest rate  
              Duration estimation and its implication for portfolio Management |
| 13         | Convexity estimation  
              Convexity Gain  
              Butterfly  
              Duration and Convexity of an Embedded Option Bond  
              Impact of Negative Convexity Bond sensitivity  
              PV01 and its impact on portfolio strategy |
| 14         | Approaches to Trading and Hedging  
              Trading & Hedging |
| 15 and 16  | Fixed Income Derivatives  
              Futures  
              STIR Futures  
              Long Bond Futures  
              Contract Specification  
              Conversion Factors  
              Cheapest to Deliver Concept  
              Hedging with Bond Futures |
| 17         | Swaps and Option Basics  
              Interest Rate Swaps  
              Forward Rate Agreements |
| 18         | Other OTC Derivatives  
              Credit Derivatives  
              Understanding CDS spread  
              Pricing a CDS using Black-Scholes-Morton Model  
              Securitisation Process  
              SPV and PTC  
              Asset Backed Securities  
              Mortgage backed Securities |
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| 19         | VaR Basics and its use in Fixed Income Securities Market  
VaR Concept  
Variance Covariance Method |
| 20         | Historical Simulation  
Back Testing and Validation |

**Prerequisites and pre-assignment:**

The only prerequisite for the course is good understanding of Financial Management that students have gone through in 1st Year. There is no formal pre-assignment, but I assume basic understanding of Time Value of Money and Valuation as well as of Probability, Matrices, Calculus and Regression. MS-Excel is the most important tool we will use in the class to internalize the concepts. Have some good practice of the MS-Excel. If you have done your Summer Internship in any Investment Bank or leading Brokerage houses, it will be an added advantage.

**Grading**

Grading will be fair and objective and as per the Institution Rules. Quiz results and Assignment results will be generally available in 24 hours but it can take more time if external expert's view is sought on valuation assignments. The following components will be taken for Grading:

1. Quiz – 30% (Average of 3 quizzes of 45 Minutes duration with 25 short questions in each Quiz).
2. Assignments (30%)
3. End Term (40%) – (Open Book)

**Class Assignment:** (1) The Assignment will be a live Auction Participation which will happen between 3rd and 5th visit of the faculty to the campus. (10%); (2) Take away assignments where students (Group) will be allowed take home two assignments and submit the same during the next visits (time frame will be defined). (20%). Assignments Submission will be supported by a 10-15 minutes video recording of final presentation and discussion among the Group members showing all group members have contributed to the assignment. The same may be uploaded to youtube.com.

**Student Contact**

Two students (preferably a male and a female) will volunteer to interact with the Instructor for all correspondence and courseware uploads to course-web.

**Student Counseling**
The instructor will be available in the campus on the class days for counseling, tutorials as well as career planning advice in financial markets. Students are free to discuss the issues they feel fit to discuss with the instructor.

Contact Details
Course Instructor will be available at golak.nath@gmail.com.

Telephone
+91 9820511897

Assignments – First Set (10%)
Group (Max 8 Members) Assignments (Due before Second Visit):
1. Prepare a Report on Various Interest Rates which are available in the fixed income market in India and the purpose of such interest Rates.
2. Prepare a Report on LIBOR Manipulation and its impact on Policy design of both Emerging and Developed Markets.
4. Prepare a Report on Debt Funds (you can create a group index) performance for last 5 years and compare the same with the interest rate structures in India.
5. Prepare a Report on Liquidity adjustments undertaken by RBI in last 5 years to ensure liquidity is available to Banks at reasonable rate.

Assignments – Second Set (10%)
Topics will be announced later during the Course.