

## Fixed Income Analytics

Learning Objective: After taking this tutorial participants will have an understanding of key analytical concepts in fixed income portfolio management and trading. These include measures of risk (such as duration, convexity, spread duration) and the valuation of fixed income securities for both option-free bonds and bonds with embedded options.

### Typical Schedule

#### *Day 1:*

Registration: 12:55-1:00pm

Class: 1-5:00

#### *Day 2:*

Class: 8:30-4:30

Lunch: 12-1

### **COURSE OUTLINE:**

#### **Traditional Yield Measures and Their Limitations**

- Potential sources of return
- Yield to maturity, yield to call, yield to worst
- Portfolio yield measures (Average yield and IRR)
- Reinvestment risk
- Yield spread for floating-rate securities

#### **Total Return**

- Applications of total return
- Scenario analysis

#### **Term Structure of Interest Rates**

- Yield curve
- Theoretical spot rate curve and its construction
- Forward rates
- Arbitrage-free total return
- Relationship between spot and forward rates
- Types of yield curve shifts

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#### **Valuation of Bonds with Embedded Options**

- Types of embedded options
- Zero-volatility spread
- Option-adjusted spread
- Generalized bond valuation model
- Binomial method for valuing corporates, agencies, municipals, and structured notes
- Monte Carlo simulation for valuing MBS
- Incorporating OAS into a total return framework

#### **Measuring Interest Rate Risk**

- Properties of option-free bonds
- Duration (Macaulay, modified, dollar, effective)
- Limitations of duration and convexity
- How good is duration for noncallable corporate bonds
- Price/yield relationship for callable corporate bonds
- Negative convexity for callable bonds
- Effective duration and convexity
- Spread duration
- Measures of yield curve shift exposure
- Difficulties of controlling risk against an index