

FE 502 - FIXED INCOME SECURITIES

2020 - SPRING

INSTRUCTOR

Cenk C. KARAHAN

CLASS TIME

Mondays 7–10 pm

CLASSROOM

VYKM 4

EMAIL

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OFFICE LOCATION

IB 305

OFFICE HOURS

By appointment only

COURSE OVERVIEW

A quantitative introduction to bonds and other debt instruments. Covers the models and techniques required to price and analyze fixed income securities and their derivatives. Topics include the basic concepts of fixed income instruments, such as yield, duration, convexity; pricing traditional derivatives such as swaps and bond options; management of fixed income portfolios and hedging of associated risks; term structure models and their use in valuation of derivative instruments. A brief introduction to credit risk modeling and valuation of credit derivatives. The course objective is to familiarize students with the economic use of fixed income instruments and introduce required technical tools.

READING

Fixed Income Securities: Valuation, Risk, and Risk Management by Pietro Veronesi

Credit Risk Modeling: Theory and Applications by David Lando

The Wall Street Journal, Financial Times.

Selected articles that will be assigned as the semester progresses.

GRADING

- **Homework (40%)** – Problem sets to practice quantitative tools taught in class.
- **Case Study Reports (20%)** – Brief written analyses of two case studies.
- **Participation (10%)** – Contribution to in-class discussions.
- **Final (30%)** – Final exam covering the issues discussed in class.
- **Attendance** is crucial for this class. Your presence and active participation in class discussions are expected and strongly encouraged.

COURSE CONTENTS

Below is a tentative outline of the topics that will be covered throughout the semester.

- **Basics of Fixed Income Markets and Securities (1 week)**
An introduction to fixed income markets, discount factors, interest rates, term structure, coupon bonds, floating rate bonds, rate of return, yield to maturity.
- **Interest Rate Risk Management (2 weeks)**
Duration, convexity, immunization, slope and curvature.
- **Interest Rate Derivatives (2 weeks)**
Forward rates and contracts, interest rate swaps, futures and options, use of derivatives for hedging and trading.
- **Term Structure Models: Discrete Time (2 weeks)**
Risk neutral probabilities, no arbitrage pricing, interest rate models, binomial trees, American options, callable bonds, caps, floors, swaps and swaptions.
- **Term Structure Models: Continuous Time (3 weeks)**
Continuous time interest rate models, market models, no arbitrage pricing, relative value trades, Monte Carlo simulation and derivatives pricing.
- **Credit Risk and Credit Derivatives (3 weeks)**
Modeling credit risk, structural models, intensity modeling, default correlation, credit derivatives, Credit Default Swaps (CDS), Collateralized Debt Obligations (CDO).

