National Research University Higher School of Economics

Banking Institute

Master's Programme "Financial Analyst"

Theory of Finance

Course Syllabus

1. Course Description

Course Title: Theory of Finance

Course Prerequisites: Introductory financial markets (or introductory financial economics), introductory microeconomics and introductory econometrics are prerequisites for this course. Basic understanding of calculus, matrix algebra, and probabilities is advisable.

Course Type: Compulsory

Abstract: This course is designed to introduce to students the fundamental issues of the Theory of Finance. It is an in-depth study of what the fundamental properties of key financial instruments are and what techniques based on these properties for appropriate pricing and / or detecting mispricing have been suggested. In addition to a thorough insight into fundamental theoretical concepts the course covers some areas of related applied / quantitative research.

Two key types of financial instruments are studied throughout the course, bonds and equities. The course's focus is on fundamental and advanced concepts as well as applications in asset pricing in bond and equity markets. It investigates into what are approaches to asset pricing when pay-offs are certain (fixed claims) and when pay-offs are uncertain (state contingent claims).

The course provides essential knowledge and competence at a postgraduate level to those students who intend to follow careers in applied or quantitative finance, as well as to those students who intend to pursue further research. It would be beneficial for perspective CFA level 2&3 test takers as well.

2. Learning objectives

The course is rather intense. There are both basic theoretical concepts and elaborate formal models of bond and equity markets as inputs to the course's content. It involves considering both classic and recent research contributions to the area. This is to give students a solid and comprehensive understanding of the fundamentals and evolution of the Theory of Finance.

The course has the following key objectives:

- To improve students' understanding of basic theoretical concepts of the Theory of Finance;
- To present various techniques for appropriate pricing and / or detecting mispricing in bond and equity markets;
- To discuss management of uncertainty in pay-offs and portfolio optimization strategies;
- To guide students through applications of the Theory of Finance in preparation for future independent quantitative research.

3. Learning outcomes

Upon completion of the course students are supposed to possess sufficient expertise to give qualified judgments on conceptual finance issues. In particular students will be able to:

- Clearly articulate on key finance issues in valuation of bonds and equities, identify and understand important research contributions to the evolution of the Theory of Finance;
- Distinguish among formal models and critically discuss key facts about them (assessment, implications, uniqueness, debatable aspects, etc.), draw an analytical conclusion based on these key facts;
- Be familiar with research at the frontier of finance, formulate a research proposal, identify the problem, attach importance to it and suggest an appropriate solution techniques;
- Possess sufficient knowledge and competence in finance issues to be able to progress to a career in financial industry or to take on an independent research at a PhD level at a university either at home or abroad.

4. Course outline

№	Topics	Week	Contact Hours		Home reading & assignment
			Lectures	Tutorials	
Module 3					
1	Market for discount and coupon bonds: basic assumption of bond pricing, alternative bond pricing techniques, sources of risk and hedging strategies	1	2	2	8
		2	2	2	8
		3	2	2	8
2	Arbitrage and price consistency in bond markets: empirical issues	4	2	2	8
3	Arbitrage and price consistency in bond markets:	5	2	2	8

	theoretical issues				
4	Market for contingent claims: the SDF model, risk-neutral valuation, and contingent claims valuation	6	2	2	8
5	SDF and discount bond valuation	7	2	2	8
Module 4					
6	Expected utility and risk aversion	1	2	2	8
7	Portfolio Theory: expected utility maximization, the mutual fund theorem, the Sharpe portfolio separation theorem, portfolio choice with and without a safe asset; application to the mutual fund industry	2	2	2	8
		3	2	2	8
		4	2	2	8
8	Capital Asset Pricing Model	5	2	2	8
9	Alternative asset allocation strategies	6	2	2	8
		7	2	2	8
Total		14	28	28	56

5. Texts, readings and other informational resources

Required readings:

Lecture notes

Lecture notes will be distributed at the end of each lecture in the PDF format. Each lecture note will contain references specifically for the topic covered (textbook chapters and / or journal articles).

Textbooks

Cochrane, J. H. Asset pricing. Princeton University Press, 2005.

Additional readings:

Textbooks

Campbell, J., Lo, A. MacKinlay, C. The Econometrics of Financial Markets. Princeton University Press, 1996.

Duffie, D. Dynamic asset pricing theory. Princeton University Press, 2001.

6. Grading system

Students' performance is evaluated on a 10-point mark scale as follows:

Points	Description
10	Distinguished performance
8-9	Excellent performance
6-7	Good performance
4-5	Satisfactory performance
0-3	Fail

The rounding of the definitive performance grade is conducted in accordance with the standard mathematical rounding rules. The rounding of the intermediate grades is not conducted to avoid the rounding bias.

7. Guidelines for knowledge assessment

Students' performance is evaluated as follows:

- Home assignments (40%)
- Final exam (60%)

The tutorials are designed primarily to discuss home assignments. Some home assignments will be computer-based to study numerical exercises in the area of related applied / quantitative research. One home assignment will have a submission deadline and will be graded.

The exam will be closed-book, in a written form, and will be arranged at the end of module 4.

Make-up policies and policies on late work

Home assignments submitted beyond the deadline are **not accepted for assessment**. For those students who have to miss the exam, we will make it up in due time.

8. Special equipment and software support

Not required.