

Theory of Finance Course Syllabus

Instructor	Victoria Rodina, Faculty of Economic Sciences
Credits	3
Contact Hours	40 hours
Home reading	74 hours
Master's Programme	Strategic Corporate Finance
Study Mode	Blended

I Learning objective, learning outcome and prerequisites

Abstract

The course is designed to introduce to students the fundamental issues of financial theory. It is an in-depth study of what the key properties of financial assets are and what techniques for setting fair pricing and detecting arbitrage mispricing have been suggested. The course is rather intense. It involves considering both classic and recent research contributions to the area. In addition to a thorough insight into fundamental theoretical concepts the course covers some issues of related applied research.

The course provides essential knowledge and competence at a postgraduate level to those students who intend to follow careers in applied finance, as well as to those students who intend to pursue further research. It would be beneficial for perspective CFA level 1-3 test takers.

Learning objectives

The learning objectives are to give students a solid and comprehensive understanding of the fundamentals and evolution of financial theory:

- To improve understanding of basic theoretical concepts and elaborate formal models of financial theory;
- To familiarize students with various techniques for setting fair pricing and detecting arbitrage mispricing in bond and equity markets;
- To familiarize students with management of uncertainty of payoffs and strategies of portfolio optimization;
- To guide students through applications of financial theory in preparation for future independent research.

Learning outcomes

Upon completion of the course students are supposed to possess sufficient expertise to give qualified judgments on conceptual finance issues. 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 financial theory;

- 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 and suggest 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.

Course Prerequisites

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

II Course outline

Nº	Topics	Contact hours	Home reading	Control tools	Final test
1	Market for discount and coupon bonds Price risk and default risk; linearity and value additivity; valuation in a single period; and in multiple periods; discount yield and discount price; forward rates; linear and non-linear pricing; coupon effect; duration and convexity	Lecture 4 Tutorial 4	Home work 10 Online 6	Numerical problem set	
2	Consistent prices and no-arbitrage in bond markets Zero-coupon term structure and coupon term structure; discount function; consistent pricing equations; complete coupon bond market model; incomplete coupon bond market model; equivalence theorem; hyperplane separation theorem	Lecture 4 Tutorial 4	Home work 12 Online -	Numerical problem set	
3	Consistent prices and no-arbitrage in state contingent markets Non-defaultable markets vs state contingent markets; state prices vs date prices; stochastic discount factor model, risk-neutral valuation model; contingent claims valuation model; isomorphism; risk premium within the SDF framework and the risk-neutral framework; price and quantity of risk	Lecture 2 Tutorial 2	Home work 8 Online -	Numerical problem set	
4	Spot rate modelling and discount bond valuation Log-normal lemma; spot rate dynamic process; SDR dynamic process; Vasicek affine yield model: discrete derivation and critical assessment	Lecture 2 Tutorial 2	Home work 8 Online 2	Numerical problem set	
5	Portfolio Theory Risk aversion and utility function; Jensen's inequality; absolute and relative risk premium; CARA and CRRA; gambling vs investment; expected utility maximization; monotonic transformation; Mutual fund theorem and Sharpe port-	Lecture 6 Tutorial 6	Home work 20 Online -	Numerical problem set	

	folio separation theorem; portfolio choice with a safe asset and unconstrained optimization; portfolio choice without a safe asset and constrained optimization; minimum variance portfolio and optimal portfolio				
6	Capital Asset Pricing Model Equilibrium assumption; characteristic line and the beta coefficient; CAPM as a special case of the SDF model; application of CML and SML	Lecture 2 Tutorial 2	Home work 6 Online 2	Numerical problem set	
	Total hours	40	74		

III Guidelines for knowledge assessment

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

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

The definitive grade is made up of a grade for home assignment with 40% weight and a grade for the final test with 60% weight. The definitive grade is rounded in accordance with the standard mathematical rules. The intermediate grades are not rounded to avoid biases. One home assignment will be graded. It will be given in the middle of the course and will have a submission deadline. The final test will be closed-book, in a written form, and will be arranged at the end of the course. Students will be given 2 hours to accomplish it.

Make-up policies and policies on late work

The graded home assignment submitted beyond the deadline is not accepted. A student who fails to submit the graded home assignment and does not have a good excuse will not resubmit it. The null grade will be given. A good excuse means that a student is ill for no less than 50% of the preparation period which starts on the date the graded home assignment is announced and ends on the date the submission deadline is over. A student who fails to submit the graded home assignment and has a good excuse will resubmit it in due time.

A student who fails the final test or misses the final test and does not have a good excuse will not resit it. A good excuse means that a student is ill on the final test date. If this student misses the final test with a good excuse, we will make it up in due time.

IV Sample questions

There are no control tools with blocking capacity for the course.

V Suggested readings and information resources

Required readings:*Lecture notes*

Lecture notes will be distributed upon completion of each lecture in PDF and will provide references for the topics covered (book chapters and / or journal articles).

Textbooks

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

Additional readings:*Textbooks*

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

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

Online course

Open Yale course Financial Theory at <https://oyc.yale.edu/economics/econ-251>

VI Software support and special equipment

Lecture rooms equipped with a laptop connected to a multimedia projector under remote control.