MIF COURSES

Program «Masters in Finance»

MIF students have to earn 20 credits. They will also have an opportunity to audit two extra courses, i.e., take courses without any academic requirements of either doing homework assignments or passing exams. Each course has prerequisites.

101. Foundations of Finance (required course, 1 credit, RUS)
Instructor: Prof. Sergey Kovbasyuk, Ph.D. TSE, NES professor

Prerequisites: *-*

This course is the core finance course. It provides an overview over the most common types of financial securities and modern financial markets, covering core topics of corporate finance and investments: the time value of money, opportunity cost, arbitrage pricing, bond valuation, stock valuation, portfolio theory, asset pricing, derivatives, and market efficiency.

102. Data Analysis in Python (required course, 1 credit, RUS)
Instructor: Evgenij Kosarev, Sber

Prerequisites: *-*

Data analysis is an integral part of modern finance. The goal of the course is to teach you how to work with Python, a popular open-source software for analyzing data, presenting results, and making informative decisions based on analytics. You will learn main techniques and hands-on tools for business applications which will be useful for many other courses in the program and most likely in your career more generally.

103. Math Refresher (0.5 credit, RUS)
Instructor: Prof. Pavel Katyshev, NES professor

Prerequisites: *-*

This half-module course is devoted to the review of the probability theory as well as some other concepts from mathematics often used in finance. It includes four three-hour classes and several seminars. This course will be useful for those who need to brush up their math skills and prepare themselves for more advanced material of the curriculum.

104. Career in Finance (1 credit, offline, RUS)
Instructors: Alexandra Polimatidi, HR Banking-Finance

Prerequisites: *-*

This course will help to broaden your knowledge of career opportunities in finance and facilitate your career development. You will get practical advices on how to talk to recruiters and prepare for interviews. You will also learn about importance of thinking about your career strategically. The course will consist of two in-class lectures and five on-site company visits that will give you an opportunity to learn about companies' work environment and possibly meet your future employer. The list of companies will include a wide range of employers from both the private and public sectors. The course aims mostly at the second-year students, but the first-year students are also welcome.

105. Data Visualization in Business (0.5 credit, RUS)
Instructor: Kim Voronin and guest speakers

Prerequisites: *-*

The goal of the course is to teach non-designers how to visualize information in a nicely looking, understandable way. This course will help you to learn how to prepare professionally looking presentations about projects, financial reports, and other material. You will also learn how to create interactive dashboards. Knowledge of data analytics tools for business intelligence is valuable in financial community.

106. Modelling in Corporate Finance (0.5 credit, online, RUS)
Instructor: Andrei Nagurnyi

Prerequisites: *202 Financial Accounting, 302 Corporate Finance*

The key objectives of the course are to discuss standards and techniques accepted by corporate finance professionals worldwide, to utilize standard functionality of MS Excel for easy-going modelling, and to develop a project financial model applying the rules and techniques learned. The course helps to master modelling techniques widely used in financial industry.

201. Derivatives (required course, 1 credit, RUS)
Instructor: Prof. Yerkin Kitapbaev, Ph.D. University of Manchester, Khalifa University Professor, Abu Dhabi, UEA

Prerequisites: *101 Foundations of Finance, 102 Data Analysis in Python*

This is an introductory course to the theory and practice of financial engineering and derivatives. It will cover forwards and futures contracts, binomial and Black-Scholes-Merton models for option pricing, hedging and replication of derivatives, implied and historical volatility, volatility surface, and other topics. The course is especially relevant to students interested in financial markets and securities trading.

202. Financial Accounting (required course, 1 credit, ENG)
Instructor: Prof. Davide Cianciaruso, Ph.D. Northwestern, NES Professor

Prerequisites*: -*

This course introduces you to fundamental accounting concepts and principles. It provides the skills necessary to understand the content of financial statements and how they interact with each other. You will also learn to construct and analyze basic financial statements. The goal is not to train you as an accountant but rather to help you become informed user of financial statements.

203. Macroeconomics (1 credit, RUS)
Instructor: Konstantin Styrin, Ph.D. Harvard University, Bank of Russia

Prerequisites: *-*

The course provides an overview of main concepts in macroeconomics. The topics include national income accounting, economic growth, inflation, exchange rates, capital flows, and others. The course covers basic macroeconomic models as well as macroeconomic policy issues for developed and developing economies.

204. Business Statistics (0.5 credit, RUS)
Instructor: Prof. Marat Salikhov, Ph.D. INSEAD, NES professor

Prerequisites: *102 Data Analysis in Python*

Data analysis and statistical methods lie at the core of sound financial decision-making. Which factors determine the company's probability of default? How to forecast the company's revenue in the next quarter? This course will equip you to address these and other critical financial questions by providing a solid foundation in statistical analysis for business and finance applications. Through hands-on learning, you will gain fundamental skills in statistical estimation, hypothesis testing, and regression analysis.

205. Financial Regulation (0.5 credit, RUS)
Instructor: Alexey Lobanov, к.э.н., ИЭ РАН; HSE Banking institute

Prerequisites*: 101 Foundations of Finance, 301 Investments, recommended – 503 Banking*

Micro- and macroprudential regulation has been a pillar of financial stability and also a driving force behind innovations in the financial industry. The course gives an overview of the regulatory architecture after the Global financial crisis of 2008–2009 centered around banks as fragile and opaque financial intermediaries. Through discussions and case studies, you will learn about the design as well as pros and cons of the Basel capital adequacy and liquidity requirements, deposit insurance, and bank system structure.

206. Modelling in Fixed Income (0.5 credit, RUS)
Instructor: Roland Grinis Ph.D. Oxford, MPTI

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 301 Investments, 401 Derivatives: Applied course*

This course will provide a deep dive into fixed income derivatives modelling, addressing some of the difficulties the industry faced in recent years. We will overview management of yield curve risk, cover RFRs and the passage from LMM to FMM, modelling cash-settled vs swap-settled swaptions, CMS products, multi-rate derivatives and copula methods, callable products and regression methods, TARNs and volatility swaps. Finally, we will discuss issues related to model adjustments and risk management.

207. Public Speaking (1 credit, RUS)
Instructor: Yury Maisky, ToastMasters
and Irina Suvorova, ToastMasters, DTM

***Prerequisites:** -*

This course will help you to improve your public speaking skills. You will learn useful tricks of how to train your voice, how to use pauses and gestures, how to structure your speech, how to speak on stage and not to be afraid of speaking in front of the camera, and a lot more. You will learn effective ways of how to introduce yourself, speak about your project or idea, and improvise.

301. Investments (required course, 1 credit, RUS)
Instructor: Prof. Andrey Simonov, Ph.D. INSEAD

***Prerequisites**: 101 Foundations of Finance*

This course uses a combination of cases, lectures, and class discussions to examine how money is managed by professional money managers. The course involves a mixture of finance and economics, theory and hands-on exercises in Python. It will review classical topics in the field of investments and introduce frontier research on the subject. The course will touch on a number of public policy issues likely to be important for years to come and provide students with a framework within which these issues can be addresses in a useful manner.

302. Corporate Finance (required course, 1 credit, ENG)
Instructor: Prof. Pavle Radicevic, Ph.D. UNSW, NES professor

***Prerequisites**: 101 Foundations of Finance, 202 Financial Accounting*

The goal of this course is to familiarize you with the introductory-level topics in corporate finance and to discuss the most important financial decisions of a firm. The core of the course is the analysis of capital budgeting, capital structure decisions and risk management. The capital budgeting topics will cover various techniques of evaluating and comparing projects. The capital structure topics will examine the choice of sources of finance for a firm; in particular, the choice between debt and equity financing and how does this relate to the firm's investment evaluation.

303. Financial Econometrics (1 credit, RUS)
Instructor: Prof. Aleksey Kolokolov, Ph.D. U of Rome, NES professor

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 204 Business Statistics*

This course introduces econometric techniques and methods for analyzing financial data, with emphasis on practical elements of time series analysis related to asset return modeling. Key topics include time series forecasting (with applications in return predictability and testing the efficient market hypothesis), multiple time series analysis, and volatility modeling with applications to financial risks management. The final part of the course covers the cross-sectional aspects of financial returns, including factor pricing models. The course helps to acquire important intuition for econometric techniques and gain practical skills for data analysis.

304. Risk Management (1 credit, RUS)
Instructor: Prof. Alexei Goriaev Ph.D. Tilburg, NES professor

***Prerequisites**: 101 Foundations of Finance, 201 Derivatives, 301 Investments*

This course introduces main tools in risk management. These tools are presented in the context of a holistic framework of the enterprise-wide risk management, which includes identification, evaluation, treatment, and monitoring of risks. The core focus is on measuring market and credit risk using Value at Risk (VaR) as well as other metrics. Business cases are used to highlight important issues in implementation of risk management strategies in practice and the role of CRO in firms.

305. FinTech (1 credit, online, RUS)
Instructor: Sergei Ivliev, к.э.н., Vlinder

***Prerequisites**: 101 Foundations of Finance*

The course is designed to give a helicopter view of the digital assets' ecosystem emerged after the introduction of the Bitcoin in 2009. You will learn about blockchain protocols, token issuance, cryptocurrency exchanges, decentralized finance (DeFi) and decentralized autonomous organizations (DAO) applications. Along the way, you will get introduced to the world of the modern cryptography.

401. Derivatives: Applied course (1 credit, RUS)

Instructor: Roland Grinis Ph.D. Oxford, MPTI

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 301 Investments*

This applied course builds upon the core derivatives course. It equips students with hands-on tools on how to model derivatives and properly calculate risks involved. The topics include modelling stochastic volatility and calibration of volatility surfaces, local volatility models, Monte-Carlo methods, pricing American options, short-rate models, the HJM framework and LMM, calculations of various valuation adjustments (xVA), initial margin models, and finally machine learning applications such as deep hedging. The course is especially relevant to students interested in quantitative finance.

402. Private Equity and Venture Capital (1 credit, RUS)
Instructor: Dmitry Lukin Ph.D. INSEAD, Rhodiola Capital

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

The course is designed to provide a real world understanding of the private equity marketplace from the perspective of the private equity investor. It helps to understand key issues in the private equity financing process and the interaction between entrepreneurs and private equity investors, ways to employ corporate finance principles (such as contingent claims and contracting theory) for the analytical valuation of new ventures and buyouts as well as the structure and essential institutional features of the global private equity industry.

403. Machine Learning in Business (1 credit, RUS)
Instructor: Ivan Stelmakh, Ph.D. Carnegie Mellon University, NES professor

***Prerequisites**: 102 Data Analysis in Python, 204 Business Statistics*

The course provides an advanced intro to machine learning. In the first part of the course (depth), we will demystify several classical ML algorithms by understanding their theoretical underpinnings and solving practical problems. In the second part of the course (breadth) we will get fascinated by the power of deep learning and discuss additional recent topics such as bias and fairness in ML.

404. Corporate Hedging (1 credit, ENG)
Instructor: Prof. Pavle Radicevic, Ph.D. UNSW, NES professor

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

This course will introduce you to risk management from the perspective of non-financial corporations. You will learn:1) what risks companies should manage and why, 2) how risk management policies should be developed and organized, and 3) how the various types of risk can be measured and managed. In the process, you will gain critical new insight into the operational problems that today's corporations face, and how financial market conditions affect firms' hedging policies.

405. Quant Trading (0,5 credit, ENG)
Instructor: Prof. Grigory Vilkov, Ph.D. INSEAD

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 301 Investments, 303 Financial Econometrics, 403 Machine Learning in Business*

The course offers a practical introduction to the systematic portfolio construction process and the key success factors of quantitative trading. Students will implement and analyze algorithms in Python, starting with linear models and progressively building toward machine-learning and deep-learning architectures to transform information into investment portfolios. Each design choice is critically evaluated to understand its practical consequences for live trading.

406. Talent Management (0,5 credit, RUS)
Instructor: Prof. Natalia Kuptsova, MSc, University of London

Prerequisites: *-*

This course provides frameworks for managing people and teams in the workplace. Students will explore leadership styles, team dynamics, and talent management strategies. Key topics include situational leadership, team development models, and organizational culture. The course is designed to equip future leaders with the skills to effectively develop and retain talent.

501. Fixed Income (1 credit, online, RUS)
Instructor: Vladimir Krasik Ph.D. NYU, Head of Financial Risk, Revolut

Prerequisites*: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 301 Investments*

This course provides a solid framework for the practical analysis of fixed income instruments: bonds, forwards/swaps and credit instruments. While the primary focus is the valuation of cash and derivative instruments and their real-world applications, the course also covers the general principles of the credit analysis and basic concepts of the portfolio management. Upon completing the course students should be able to calculate bond and swap prices, duration as well as understand swap and zero curves, credit spreads and basic credit derivatives, floating rate and inflation-linked bonds, structured bonds, bond indices and many other fixed income topics.

502. Advanced Corporate Finance (1 credit, RUS)
Instructor: Dmitry Lukin Ph.D. INSEAD, Rhodiola Capital

Prerequisites*: 101 Foundations of Finance, 102 Data Analysis in Python, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

This course is designed as a continuation of a core corporate finance course and focuses on understanding financing and investment policies in a firm. Using both lectures and case studies, this course applies corporate finance theory to applications that include capital budgeting, cost of capital, valuation, dividend policy, raising capital, mergers and acquisitions as well as real options. The course is taught as a combination of lectures and HBS case studies.

503. Banking (1 credit, RUS)
Instructor: Vladimir Snorkin, Sber

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

This class covers some key themes in the commercial banking industry, including topics of value creation, pricing, risk management, and banking regulation. The goal is to provide a framework for understanding the sources of the revenue and fragilities of commercial banks. The topics include capital management, liquidity management, managing FX and IR risks as well as discussion of new trends in banking industry related to development of ecosystems, applications of AI and ML, and others.

504. AI in Marketing (1 credit, RUS)
Instructor: Prof. Darya Dzyabura, Ph.D. MIT Sloan, NES Professor

***Prerequisites**: 102 Data Analysis in Python, 204 Business Statistics, 403 Machine Learning in Business*

From product design and innovation, to brand metrics and advertising effectiveness, firms are increasingly making their decisions based on data and analytics. This course provides an overview of artificial intelligence methods and their applications in business, with emphasis on problems in marketing. The course uses data-based assignments and business cases to introduce core marketing concepts and methods.

505. AI in Fintech (0,5 credit, RUS)
Instructor: Ruslan Morozov, Sber

506. Preparation for MiF Final Exam (no credit, online)
Instructor: Ireko Zamilov

***Prerequisites**: 101 Foundations of Finance, 201 Derivatives, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

The course helps students to prepare for the MIF final exam. It reviews main topics, concepts, and formulas in the areas of corporate finance and investment that have been previously covered in the MiF core courses: foundations of finance, investments, accounting, corporate finance, and derivatives. Practice questions from the past final exams will be reviewed as well.

507. Individual Projects (2 credits)

***Prerequisites**: 101 Foundations of Finance, 102 Data Analysis in Python, 201 Derivatives, 202 Financial Accounting, 301 Investments, 302 Corporate Finance*

This course provides an opportunity to explore in depth the topic you find interesting and make your own discovery. You will learn how to define the scope of project, carry out analysis, write up reports and present results. Along the way, you will have to overcome numerous challenges. The experience is relevant for those who plan to apply for Ph.D. studies, but also helps to develop skill of problem solving, appreciated in business settings.

Read carefully MIF NES Rules: here