



Master in Finance

Second year - Financial market and risk evaluation - Syllabus 2019-2020

UE1: ASSET PRICING

Semester: 3

Language: English

ECTS Credits: 5

Lecture Hours: 30

Presentation and intended learning outcomes

This course covers the fundamentals and practice of asset pricing.

The first part of the course will pay special attention to fixed income products. Financial institutions and corporations use fixed income products to manage their assets and liabilities. They can use financial derivatives such as futures, options, and swaps to hedge their risks or to change the returns of their portfolios. The purpose is to provide students with the necessary skills to value and to employ fixed income instruments. We will specifically focus on instruments that are mostly used by portfolio managers, treasurers and traders, namely interest rate derivatives, currency forward contracts, interest rate swaps and options. The approach will be very market oriented in order to offer a link between the theory (pricing models) and the market practices.

The second part of the course will uncover the fundamentals of asset pricing models, starting from notions of market efficiency and anomalies linked to return predictabilities. We start by introducing basic concepts and dynamic asset pricing models building on the CAPM, with the aim of understanding how these models can be used to explain asset prices. We develop consumption-based asset pricing models and explore how asset prices depend on future expected payoffs and investors' preferences about consumption and risk, and how they are affected by consumption and payoff shocks. We introduce factor models and give an outlook on their use and role in practice.

By the end of this course, students should be able to:

- apply consumption-based asset pricing models to assess risk premia
- explain the market efficiency hypothesis and its empirical validity
- discuss the use and role of factor models
- apply asset pricing models to evaluate investment performance

- compute the value of fixed income instruments
- choose the right fixed income instrument according to a financial objective

Prerequisite

Students are expected to have a minimum preparation in mathematics, statistics and econometrics. An introductory course of Asset Pricing is a plus. Students are expected to have a basic knowledge of standard financial instruments (bonds, forward contracts, options).

Bibliography

- John Cochrane, Asset Pricing, Princeton University Press, 2005.
- Lionel Martellini, Philippe Priaulet, Stéphane Priaulet, Fixed-Income securities, Wiley
- A guide to the ACI dealing certificate
- Websites: BIS, ECB, FED, ISMA, ICMA, SIFMA

UE2: CORPORATE FINANCE

Semester: 3

Language: English

ECTS Credits: 5

Lecture Hours: 30

Presentation and intended learning outcomes

The course covers several topics in corporate finance and emphasizes the interaction between financial decisions and strategic choices of corporations. The objective of the course is to apply concepts and tools from finance theory to analyze actual problems faced by firms, and to provide insights on the practice of corporate finance.

At the end of this course, students should be able to:

- apply standard conceptual frameworks used in finance to major corporate events (like e.g. IPOs, M&A, dividend distribution, corporate governance decisions, early stage fund raising, ...)
- evaluate the financial implications of these events
- identify the ethical issues at stake for corporations
- appreciate the role of corporate governance.
- provide concise summaries of complex cases in both written and oral form
- work effectively in a group

Prerequisite

Foundations on corporate finance theory (Modigliani-Miller, trade-off theory, agency issues, asymmetric information and financial decisions)

Basics of corporate valuation and accounting (financial statements, valuation methods: DCFs, multiples, cost of capital)

Bibliography

- Brealey, Myers and Allen (2017) Principles of Corporate Finance, 12th edition, McGraw-Hill / Irwin

UE3-1: INFORMATION TECHNOLOGY FOR FINANCE (INTRODUCTION TO SAP)

Semester: 3

Language: English

ECTS Credits: 2

Lecture Hours: 12

Presentation and intended learning outcomes

Enterprise resource planning (ERP) systems are used by organizations looking to manage their business functions within a centralized and integrated system. The course is intended to explain how the fundamental business processes interact within an ERP system in the different functional areas such as sales and distribution, materials management, production planning, financial accounting, controlling, and human resource management. Special attention will be dedicated to SAP as it is the most common ERP system which is used among large enterprises. The course is given on a hands-on approach: after an introductory part, students learn to use an ERP through practical applications in computer lab.

By the end of the course, students should be able to:

- explain the main concepts of an ERP and discuss its opportunities and challenges
- describe the structure of an SAP system
- navigate through an SAP system
- execute simple SAP transactions.
- work effectively in a team

Prerequisite

- Basic knowledge in business processes
- Basic knowledge of personal computer

Bibliography

- Material will be distributed in class.

UE3-2: INFORMATION TECHNOLOGY FOR FINANCE (VBA FOR FINANCE)

Semester: 3

Language: English

ECTS Credits: 3

Lecture Hours: 18

Presentation and intended learning outcomes

Visual Basic for Applications (VBA) is an implementation of Microsoft's programming language Visual Basic, and associated development environment, built into Microsoft Office applications. Excel VBA is widely used in the finance industry, to create complex financial spreadsheet models. This intermediate course aims at providing students with a solid background and understanding of VBA structured and event-driven programming techniques, along with best programming practices, such that students write good quality, easy to maintain code.

At the end of the course, students should be able to:

- maintain an existing application through bug fixing, code cleanup, and feature developments
- develop new applications using event-driven and object oriented programming techniques
- enhance code quality through good coding practices
- synthesize information and present the results in a written form.
- work effectively in a group

Prerequisite

- General knowledge of personal computer.
- Excel (intermediate).
- Programming (beginner).

Bibliography

- Chandan Sengupta, Financial Modeling Using Excel and VBA, 2nd edition, Wiley Finance, 2009.
- Pachamanova, Dessislava A., and Frank J. Fabozzi. Simulation and Optimization in Finance Modeling with MATLAB, @Risk, or VBA. Wiley, 2010.
- John Tjia, Building Financial Models, 2nd revised edition, McGraw-Hill, 2009.
- Simon Benninga, Financial Modeling, 4th revised edition, The MIT Press, 2014.

UE4: FINANCIAL ECONOMETRICS

Semester: 3

Language: English

ECTS Credits: 5

Lecture Hours: 30

Presentation and intended learning outcomes

Financial econometrics is the application of statistical methods to financial data. It provides a set of tools that are useful for modeling financial data

and testing hypothesis about how markets work and prices are formed. The course is designed to cover the essential tools of financial econometrics and empirical finance with a moderate degree of sophistication. In this sense, the course will be applied to give students the useful tools to become fully autonomous when carrying out empirical analysis in a professional context.

On completion of this course, students should be able to:

- describe the statistical properties of the OLS estimator
- translate an economic argument into a formal econometric test
- implement simple statistical tests of hypothesis
- use statistical packages to estimate econometric models
- provide an economic and statistical interpretation of a regression output
- communicate effectively in oral and written form
- work effectively in a group

Prerequisite

Intermediate knowledge in finance theory and in econometrics.

Bibliography

Course Material

Lecture slides will be posted in Google Classroom. The slides are not a complete record of what we will discuss in class. Paper copies of the lecture notes will not be made available in class; if you want a printed copy, it is your responsibility to print them in advance. All courses announcements will be made in class and posted on Google Classroom. Please check the course page regularly.

Main Reading

- Brooks, C. (2018) *Introductory Econometrics for Finance, Second Edition*. Cambridge University Press.
- Croissant, Y. (2019). Package plm. <https://cran.r-project.org/web/packages/plm/plm.pdf>
- Hornik, K. (2019). Package tseries. <https://cran.rproject.org/web/packages/tseries/tseries.pdf>
- Kleiber, C., & Zeileis, A. (2008). *Applied econometrics with R*. Springer Science & Business Media.
- Tsay, R. S. (2014). *Financial Time Series*. Wiley.

Additional reading material might be provided if necessary.

UE5: ECONOMICS FOR FINANCE

Semester: 3

Language: English

ECTS Credits: 5

Lecture Hours: 30

Presentation and intended learning outcomes

This course introduces some fundamental economic concepts and tools and shows how these can be used to understand financial behaviors as well and the functioning of financial markets.

Upon completion of this course, students will be able to:

- describe the drivers of international trade and capital flows
- analyze the functioning of global financial markets (exchange rates, parity relations, international arbitrage)
- master the fundamental tools for international risk management
- work with economic models that underpin theories of intermediation and corporate finance
- understand the interactions between financial markets and financial decisions
- undertake a model-based analysis of financial decision-making by companies, investors and intermediaries
- apply ethical considerations to global issues
- provide concise summaries of complex cases in written form

Prerequisite

Previous exposure to basic finance concepts is a plus.

Bibliography

Part 1 – Macro

- [BH] Bekaert, Geert and Robert Hodrick, International Financial Management. Pearson, 2nd edition.
- [MSB] Miles, David, Andrew Scott, Francis Breedon, Macroeconomics - Understanding the Global Economy, Wiley, 3rd edition

Part 2 – Micro

These two textbooks can be used interchangeably, you only need to read one. They are the best textbooks covering the economic foundations of modern corporate finance.

- [BD] Berk, Jonathan and Peter DeMarzo, Corporate Finance, Global Edition (3rd edition) Pearson 2013 (ISBN 978-0273792024)
- [HGT] Hillier, David, Mark Grinblatt and Sheridan Titman, Financial Markets and Corporate Strategy – 2nd European Edition, McGraw-Hill, ISBN 978-0077129422

UE6: ASSET MANAGEMENT AND TRADING

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

This course explores the conceptual and practical aspects of asset management and trading. The focus is on investment policies, market efficiency, investment and trading strategies, and performance evaluation. Particular attention is devoted to the factors influencing securities' prices including asymmetric information and investors' psychology. These various topics are introduced through lectures, class discussions, readings, and computerized applications. A web-based 10-week simulation is organized in order to provide students with a first-hand experience in asset management and trading.

After this class, students should be able to perform the following tasks:

- describe the asset management process
- identify mispriced financial assets
- design investment strategies
- assess the performance of investment strategies
- implement trading strategies
- apply ethical considerations to management decisions
- work effectively in a group

Prerequisite

Basic mathematics and statistics.

Bibliography

- Efficiently Inefficient, Lasse Pedersen, Princeton University Press.
- Investments, Zvi Bodie, Alex Kane, and Alan Marcus, Irwin.
- Active Portfolio Management, Richard Grinold and Ronald Kahn, Mc Graw-Hill
- International Investments, Bruno Solnik and Dennis McLeavey, Pearson

UE7: DERIVATIVES

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

There has been a dramatic growth in markets for financial derivatives in recent years. The purpose of this course is to provide the student with the necessary skills to value, to assess the risks and to employ futures, swaps, options, and other related financial instruments. In order to provide a useful treatment of these topics it is necessary to stress fundamentals and to explore topics at a highly technical level.

By the end of this course, students should be able to:

- explain the arbitrage pricing methodology
- describe how financial intermediaries may hedge their position when they issue derivatives
- compute the price of complex derivative instruments (e.g., American or exotic options) or and other related financial instruments
- construct investment strategies using derivatives
- discuss regulation of derivatives contracts
- incorporate ethical dimensions and implications for sustainability in financial decisions

It covers both theoretical results as well as practical approaches. For this reason, it includes reading, case studies and a practical project.

Students are expected to:

- work effectively in a group
- synthesize information in written and oral form

Prerequisite

This course is a technical course. Students are expected to have a minimum preparation in mathematics, statistics, econometrics, and programming.

The course builds on introductory courses in market finance and risk management. Students are expected to have a basic knowledge of standard derivative instruments (forward contracts, options) and of the notion of pricing by arbitrage.

Bibliography

The book for this class is Derivatives Markets (3rd edition), by Robert L McDonald.

As an additional reference, I also recommend Options, Futures and Other Derivatives (11th edition), by John C Hull.

UE8: RISK MANAGEMENT

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

The Risk Management class aims to provide an overview of risk management within financial institutions, with a focus on market risk.

By the end of the course, students will be able to:

- describe the objectives of risk management (shareholder value maximization and beyond)
- evaluate exposure to different sources of risk (market risk, credit risk, liquidity risk, operational risk)
- apply the standard tools for Risk Management in Finance and Insurance

Prerequisite

This course requires the understanding of:

- Financial instruments basics;
- Pricing basics (Black-Scholes, Pricing parameters, Discounting);
- Greeks basics (Delta, Vega, Gamma);

Bibliography

- RONCALLI Thierry, Handbook of Financial Risk Management / Edition 1, Chapman and Hall/CRC
- HULL John, "Options, Futures, and Other Derivatives": Prentice Hall International Editions

UE9: PSYCHOLOGY FOR FINANCE

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

Traditional finance typically considers that financial markets are efficient because populated by rational investors who maximize their expected utility from consumption. This course departs from this view by showing how inefficiencies can arise due to investors' psychology and limits to arbitrage. Psychology shapes investors' preferences: Anticipatory utility, others-regarding preferences and mood are important in understanding investors' behavior. Psychology also affects investors' perception: overconfidence, confirmation bias and several heuristics may impair their judgment. Whether these psychological factors have an impact on financial markets ultimately depends on rational speculators' ability to fight against mispricings. These topics will be covered through lectures and class experiments and will trigger discussions of issues such as momentum, bubbles and crashes.

At the end of the course, students should be able to:

- identify the sources of financial markets' inefficiencies
- list the various types of investors' preferences
- describe the various types of investors' cognitive biases
- use cognitive biases to design trading strategies
- critically evaluate the impact of psychology on corporate decision-making

- work effectively in a group

Prerequisite

Basic mathematics and statistics.

Bibliography

- Investments (Eighth edition), Zvi Bodie, Alex Kane and Alan J. Marcus, Publisher: Irvin McGraw-Hill
- Irrational Exuberance (latest edition), Robert J. Shiller, Publisher: Random House Inc.
- Inefficient Markets---An Introduction to Behavioral Finance, Andrei Shleifer, Publisher: Cambridge University Press
- Efficiently Inefficient, Lasse Pedersen, Publisher: Princeton University Press.

UE10: FINANCIAL COMPUTING

Semester: 4

Language: English

ECTS Credits: 4

Tutorial Hours: 24

Presentation and intended learning outcomes

Computers and digital transactions become evermore important in the financial industry. Algorithms and models are the driving forces behind the software used for this ever increasing automatisation. In this course, students learn the basics of programming, how to construct algorithms and work with structure data. They will get a brief introduction on how data driven modelling can be used to automate tasks and decision making. They entire course is given on a hands-on approach where the students code together with the instructor. The course end goal is to finish an end-to-end project in groups of two and write a paper on the progress.

At the end of the course, students should be able to:

- write a basic Python program;
- apply different programming paradigms like functional and object oriented programming;
- use versioning control software;
- read in and manipulate structured data using dedicated libraries;
- create some basic models and algorithms in a structured and documented way;
- synthesize information and present the results in a written form.

Prerequisite

Laptop or access to university computers.

Basic understanding of math and logic

UE11: INTERNSHIP/ENTREPRENEURIAL PROJECT

Semester: 4

Language: English

ECTS Credits: 15

Presentation and intended learning outcomes

The objective of the internship is to help students develop social, communication and technical skills useful for their future career.

At the end of the internship students should be able to

- apply academic concepts in a practical situation in a professional environment
- expand content specific and transferable skills
- reinforce the professional network
- respect and integrate the opinion of others
- synthesize information and make focused presentation
- apply ethical considerations to management decisions

Prerequisite

Students should have attended the M2 classes before starting the internship.

Bibliography

Coursework.