



Master in Finance

Second year - Finance and information technology - 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: FINANCIAL INFORMATION SYSTEMS

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

Today, most corporations run ERP (Enterprise Resource Planning) software to support their business processes. Finance functions such as accountants, controllers, auditors, and also external consultants, use intensively ERP systems in their daily work and need therefore to understand how the financial processes are ran and configured. In this course students will learn how to use transactions in Financial Accounting and Management Accounting and also learn basic configuration activities. This training includes concepts and exercises in the SAP ERP.

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

- Describe the structure and master data in the financial components of SAP ERP
- Execute transactions in Financial Accounting and Management Accounting
- Explain some keys aspects in the configuration in Financial Accounting
- Execute planning functions in Management Accounting
- Describe SAP innovations in Finances

Prerequisite

- Basic knowledge in financial and management accounting
- Basic knowledge in SAP ERP

Bibliography

Useful material might be distributed in class.

UE7: BIG DATA IN FINANCE

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

Today, the rapid growth of data and storage capacity creates opportunities for collection, processing and analysis of huge datasets. Being able to extract strategic information from big financial datasets to take more information-driven business decisions, is a key competence in most working environments. The purpose of this course is to provide students with the necessary preliminary programming skills for information extraction from structured and unstructured huge financial datasets, through numerical evaluation of models.

By the end of the module the students should be able to:

- Extract useful information for business improvement from structured and unstructured huge datasets

- Numerically evaluate a model
- Manipulate huge financial databases
- Write efficient codes for any empirical issue
- Synthesize information and present the results in a written form
- Work effectively in a group

Prerequisite

Students should have followed a programming class, a statistics or econometrics course or its equivalent.

Bibliography

- Data Science and Big Data Analytics by EMC Education Services
- Art of R Programming by Matloff
- Hands-On Programming with R by Grolemund
- Data Manipulation with R by Spector
- Advanced R Programming by Wickham available here: <http://adv-r.had.co.nz/>
- Matthew Ganis and Avinash Kohirkar (2015), Social Media Analytics, IBM Press Pearson plc.

UE8: FINTECH

Semester: 4

Language: English

ECTS Credits: 4

Lecture Hours: 24

Presentation and intended learning outcomes

The main objective of the course is to introduce students to fintech, the area of business activity where finance intersects with information technology to improve and automate the delivery and use of financial services. The course will present traditional models of money and the role of banks for payments and funding, allowing students to better understand the innovations peer-to-peer lending brings. The course will then focus on blockchain and cryptocurrencies. Cryptocurrencies like Bitcoin and distributed applications based on smart contract systems are two major potential game-changers for the financial services industry. Both are based on distributed ledger technologies like blockchain. The course will introduce students to the functioning of a blockchain, such that they can better understand what blockchain-based applications can bring to the finance industry as well as their intrinsic limitations. Part of the course relies on practical applications in computer lab, like analyzing cryptocurrency price data, analyzing on-chain data, and developing smart contracts.

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

- describe how peer-to-peer lending platforms work
- assess to what extent peer-to-peer lending complements traditional banking

- articulate the mechanism behind the blockchain
- collect and analyse blockchain data
- assess applications of blockchain to financial services
- synthesize information and make focused presentation

Prerequisite

A basic understanding of the financial services industry. General knowledge of personal computer; Excel (intermediate); Programming (beginner); Statistical software (beginner).

Bibliography

There is no mandatory reading list for this course.

However, reading Nakamoto's seminal paper on Bitcoin is highly recommended: Satoshi Nakamoto, "Bitcoin: A Peer- to-peer Electronic Cash System", 2008. Available online at <https://bitcoin.org/bitcoin.pdf>

The following (free) books are also recommended, as they fully cover the technical aspects of blockchain studied in class:

- Andreas M. Antonopoulos, "Mastering Bitcoin: Programming the Open Blockchain", Second Edition, 2017. Available online at <https://github.com/bitcoinbook/bitcoinbook>
- Andreas M. Antonopoulos and Gavin Wood, "Mastering Ethereum: Building Smart Contracts and DApps", 2018. Available online at <https://github.com/ethereumbook/ethereumbook>

UE9-1: FINANCIAL REPORTING (INTERNATIONAL FINANCIAL REPORTING STANDARDS (IFRS))

Semester: 4

Language: English

ECTS Credits: 2

Lecture Hours: 12

Presentation and intended learning outcomes

The objective of this course is to introduce students to International Financial Reporting Standards.

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

- execute consolidation of simple financial statements
- describe principles and characteristics of IFRS/IAS for consolidated financial statements
- evaluate differences between IFRS/IAS and local GAAPs
- apply intricate IFRS/IAS requirements (e.g. IAS 12, IAS 21)

Prerequisite

A first course in financial accounting and consolidated financial statements.

Bibliography

I – Books:

- IFRS: Interpretation and Application, Barry J. Epstein and Eva K. Jermakowicz, John Wiley & Sons Inc., One Wiley Drive
Somerset, NJ 08875 USA
- Financial Accounting and Reporting, FT Prentice Hall, Pearson Education, Barry Elliot and Jamie Elliot
- Corporate Finance: Theory and Practice, Pierre Vernimmen Dalloz

II - Websites:

- International Federation of Accountants (IFAC): <http://www.ifac.org>
- International Accounting Standards Committee (IASC): <http://www.iasc.org.uk>
- IAS Plus: <http://www.iasplus.com>
- Securities and Exchange Commission (SEC): <http://www.sec.gov>
- Financial Accounting Standard Board (FASB): <http://www.fasb.org>

UE9-2: FINANCIAL REPORTING (STATUTORY AUDIT)

Semester: 4

Language: English

ECTS Credits: 2

Lecture Hours: 12

Presentation and intended learning outcomes

The objective of this course is to familiarize students with legal audit procedures and regulation.

At the end of the course students should be able to explain the principles and regulatory framework of audit and to describe the legal audit procedure. Students should also be able to assess the importance of ethics and compliance in audit procedures.

Prerequisite

A first course in financial reporting and consolidated statements.

Bibliography

Official regulation:

- Official Journal of the European Union, Commission regulation 1725/2003, 29 september 2003

- Official Journal of the European Union, Directive 2003/71, 4 november 2003, published on the 31 december 2003
- Official Journal of the European Union, Directive 2004/109, 15 december 2004, published on the 15 december 2004 Official Journal (France), AMF, General regulation, Arrêté 4 january 2007, published on the 20 january 2007

Books:

- "Corporate Finance", Pierre Vernimmen, Pascal Quiry, Yann Le Fur, Maurizio Dalocchio, Antonio Salvi, Wiley; 5 edition (December 11, 2017)

Web sites:

- Focus IFRS <http://www.focusifrs.com>
- International Accounting Standards Committee (IASC) <http://www.iasc.org.uk>
- Securities and Exchange Commission (SEC) <http://www.sec.gov>
- International Accounting Standards Committee (IASC) <http://www.iasc.org.uk>
- Financial Accounting Standard Board (FASB) <http://www.fasb.org>

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.