Année universitaire 2026/2027

Financial Markets - 203 - 1re année de master

Responsable pédagogique : SABRINA **BUTI** -

Crédits ECTS : 60

LES OBJECTIFS DE LA FORMATION

Ce MSc. Financial Markets est un programme international, sur 2 ans (M1 et M2), qui forme des spécialistes des marchés financiers exerçant leurs compétences au service des banques et entreprises d'investissement, des sociétés de gestion d'actifs, des cabinets de conseil, des compagnies d'assurance ou des grandes entreprises. La formation offre aux étudiants des connaissances approfondies, à la fois théoriques, quantitatives et opérationnelles, sur tous les produits négociés sur ces marchés.

Les objectifs de la formation :

- Acquérir de bonnes connaissances des marchés financiers, des modèles, des produits et des stratégies quantitatives : le cœur de ce programme international (entièrement en anglais) est axé sur des techniques d'évaluation et de négociation spécifiques, notamment des stratégies d'investissement, de couverture, d'arbitrage et de gestion des risques
- Permettre aux étudiants de développer une base de connaissances large grâce à une large palette de cours d'économie, d'éthique, de finance et de réglementation afin de renforcer et d'étendre leur socle de connaissances
- Préparer les étudiants à travailler de manière indépendante sur des projets et à produire des rapports de qualité professionnelle. La formation offre un bon équilibre entre théorie et pratique, entre compétences académiques et opérationnelles
- Préparer les étudiants à une carrière internationale, la formation offre un programme international pour préparer les étudiants aux entretiens de recrutement en France et à l'étranger. Plusieurs cours y sont consacrés et plusieurs voyages pédagogiques sont organisés chaque année dans ce but
- Acquérir une diversité et savoir travailler en équipe qui se retrouve aussi bien au niveau des intervenants que des étudiants qui ont des parcours variés et viennent d'horizons différents. Les faire travailler tous ensemble pendant deux ans crée un faisceau d'apprentissage indirect important

MODALITÉS D'ENSEIGNEMENT

L'équipe enseignante utilise toutes les méthodes et pratiques d'enseignement : le cours avec travaux dirigés, l'étude de cas, les « teaser » au début des cours, le projet, le projet transversal, le hackathon, le mémoire, la présentation orale, la préparation aux entretiens etc. Le parcours est principalement un programme en 2 ans (M1 – M2) mais il est également accessible aux étudiants titulaires d'une 1ère année de master en Economie, Finance, Mathématiques ou équivalent. Ces étudiants suivent alors le programme en 1 an et commencent directement au niveau M2. Les étudiants qui ont été recruté en 2ème année de master ces dernières années avaient tous fait un stage en front office. Le programme en 2 ans est constitué de 3 semestres de cours, de deux stages de 4 à 8 mois ainsi que d'un mémoire de master. Le programme en 1 an prévoit deux semestres de cours ainsi qu'un stage de 4 à 8 mois.

- 1er semestre – septembre à Janvier : Enseignements fondamentaux
- 2nd semestre – janvier à septembre : Stage et mémoire de master
- 3e semestre – septembre à Janvier : Enseignements avancés et enseignements optionnels
- 4e semestre – février à avril : Enseignements avancés et enseignements
- Stage de fin d'étude – mai à novembre

ADMISSIONS

- Etudiants titulaires d'une licence ou d'un Bachelor of Sciences en Economie, Gestion, Mathématiques, Ecole de commerce ou d'ingénieurs (parcours grande école) d'ENS ou de Grand Établissement reconnu équivalent
- Etudiants ayant validé en 1ère session une L3 Gestion de l'Université Paris Dauphine - PSL sous condition (sauf exception) : d'avoir obtenu une note minimale de 08/20 en première session dans chacune des UE et d'avoir choisi les cours suivants : Finance d'entreprise, Statistiques appliquées à la gestion, Mathématiques financières
- TOEFL iBT de moins de 2 ans obligatoire, GMAT ou GRE fortement recommandés

POURSUITE D'ÉTUDES

Après la 1re année du Master Financial Markets, les étudiantes et les étudiants peuvent choisir entre plusieurs M2, en formation initiale ou en alternance. Avant d'intégrer un M2, ils peuvent réaliser une année de césure si leur cursus le permet, afin de développer une expérience professionnelle en France ou à l'étranger : stage, CDD, service civique, entreprenariat, formation complémentaire…?

En 2ème année de Master, les étudiantes et les étudiants choisissent une spécialisation afin de préciser leur domaine de compétences et se professionnaliser. Ils bénéficieront d'enseignements de haut niveau dispensés par des enseignants-chercheurs de Dauphine et d'intervenants extérieurs issus du monde de l'entreprise.

Enfin, l'université aide les étudiantes et les étudiants, à se préparer à l'entrée sur le marché du travail au travers de nombreux projets professionnels ou dispositifs de stage. Les jeunes diplômés de Dauphine bénéficient ainsi d'un taux d'insertion professionnelle très élevé.

Dans le cas d'un Master recherche, cette 2ème année leur permettra de préparer au mieux leur projet de recherche, pour s'orienter par la suite vers un doctorat.

PROGRAMME DE LA FORMATION

- Semester 1
  - Enseignements Obligatoires
    - Writing a master thesis
    - Derivative pricing & Stochastic calculus I
    - Derivative pricing & Stochastic calculus I (Soutien)
    - Ethics, Professional standards & Compliance
    - Careers in Finance
    - Training for Interviews in English
    - Programming I : VBA and Python
    - Financial Derivatives
    - Fixed income I
    - International finance
    - Investment and financial markets
    - Financial Econometrics I
- Semester 2
  - Enseignements Obligatoires
    - Internship
    - Master Thesis

DESCRIPTION DE CHAQUE ENSEIGNEMENT

SEMESTER 1

Enseignements Obligatoires

Writing a master thesis

Langue du cours : Anglais

Derivative pricing & Stochastic calculus I

ECTS : 3

Enseignant responsable : VINCENT **TENA** (https://dauphine.psl.eu/recherche/cvtheque/tena-vincent)

Langue du cours : Anglais

Description du contenu de l'enseignement :

Course Objectives:

The primary aim of this course is to provide students with a comprehensive understanding of dynamic stock models and derivative securities. We will delve into essential mathematical concepts, illuminating the fundamental techniques for pricing and hedging in both discrete and continuous time. These concepts are pivotal for prospective professionals in numerous finance sectors.

Course Breakdown:

1. Probability Theory Refresher
2. Arbitrage
3. Binomial Pricing Model
4. Dynamic Strategies in Multiple Periods
5. Continuous-Time Models and Stochastic Calculus 6. Portfolio Dynamics & Stochastic Integration

7. Black & Scholes Model

Support Class for M1-level Students:

Complementing the main course, this support class seeks to solidify the understanding and application of concepts explored in 'Derivatives Pricing and Stochastic Calculus 1'. Beginning with a concise recap of salient class content, the support course then emphasizes the real- world financial application of these principles. The structure of the main course is mirrored in this supplementary class to optimize the integration and mutual reinforcement of the two courses.

Compétences à acquérir :

pricing and hedging techniques in both discrete and continuous time

Pré-requis recommandés

Prerequisites:

While the course is designed to be self-contained, with the initial chapter laying out the pertinent concepts of probability theory, an introduction in probability theory will greatly benefit the students and is not covered in this course. For further reading, chapters *All the Math you need* and *Elementary Stochastic Calculus* in “Paul Wilmott Introduces quantitative Finance”, Willmott P, 2nd Edition, Wiley. 2007.

Mode de contrôle des connaissances :

Assessment

1 mid-term exam (40%), 1 final exam (60%)

Bibliographie, lectures recommandées :

References

Shreve, S. (2005). Stochastic calculus for finance I: the binomial asset pricing model. Springer Science & Business Media.

Shreve, S. E. (2004). Stochastic calculus for finance II: Continuous-time models (Vol. 11). New York: springer.

Back, K. (2005). A course in derivative securities: Introduction to theory and computation. Berlin: Springer.

Derivative pricing & Stochastic calculus I (Soutien)

Langue du cours : Français

Ethics, Professional standards & Compliance

ECTS : 3

Enseignants : THIBAULT **GODBILLON**, PHILIPPE **NARDONE**, NICOLAS **RAYMOND**
https://dauphine.psl.eu/recherche/cvtheque/godbillon-thibault
https://dauphine.psl.eu/recherche/cvtheque/nardone-philippe
https://dauphine.psl.eu/recherche/cvtheque/raymond-nicolas-2

Langue du cours : Anglais

Description du contenu de l'enseignement :

Course objectives Conducting business in the financial sector means conducting business with highest standards of ethics and in accordance with the laws and regulations of the countries where the business is done. The course's objectives are · to understand the importance of ethics and professional standards when conducting business in the financial sector; · to get a basic knowledge of the regulation and laws; · to understand the main compliance concepts applied in Corporate & Investment Banks **Part 1. Ethical and Professional Standards**This part offers a pragmatic approach of ethics in finance, pointing out some of the recent issues that emerged since the financial crisis. The course takes as a starting point some of the recent codes of conduct issued by the finance industry as well as CFA Institute® Code of Ethics and Standards of Professional Conduct; it then turns to concrete issues such as rate-rigging, toxic assets or liabilities, product structuring, investor protection, as well as some of the recent regulation. Topics are covered through presentations in class, student presentations, exercises and case studies. Student presentations are delivered individually, in class, under a pre-set format, and are part of the participation grade. As a prerequisite, students must be familiar with CFA Institute® Code of Ethics and have prepared an example of a standard violation and corrective action for the first class. **Part 2. Global Compliance** Main objectives are giving students a global overview on the main Compliance concepts applied in a Corporate & Investment Bank and emphasizing the latest trends in regulatory environment. Theoretical courses and practical examples will be exposed to students on the main Compliance and Financial Security themes met in a Corporate & Investment Bank. · Compliance: privileged information, information barriers, conflicts of interests, market abuse and insider trading, suitability, reputation risk, etc... · Financial Security: KYC, KYB, and implementation of the European 3rd Directive embargos, countries on watch lists, combating money laundering, fraud prevention. **Course outline Introduction Course: Regulation today - for a better understanding of Ethics and Compliance (3h)** · Evolution of regulation and where we are now · Linkage between the directives · Comparison EU/rest of the world **Part 1. Ethical and Professional StandardsSession 1-Course Introduction: (1h)** Why do ethics matter? How to prepare a presentation, a case study, an exercise? Exercise on Standard violations: (Using CFA Institute® Code of Ethics and Standards of Professional Conduct) Debrief on the example prepared by each student for and before Class 1. **Session 2- What do Codes of ethics and Codes of conducts tell us? (2h)** Compare 2 different codes: what is the focus? How well do they protect clients? other stakeholders? Identify what codes teach us about business ethics, operational risks, reputation risk. **Session 3- FX rate-rigging & other benchmarks (2h)** The FX rate-rigging scandal – FX markets Codes of conduct. Importance of trust in benchmarks. **Session 4- Libor rate-rigging & other benchmarks (2h)** The Libor manipulation scandal–Libor administration before/after the scandal. Regulation on benchmarks and indices. **Session 5- Toxic assets and liabilities (2h)** Navigating through toxic assets and liabilities – examples of debt issued by local authorities, structured loans, st

Mode de contrôle des connaissances :

Participation and Final exam

Coefficient : 1.5

Bibliographie, lectures recommandées :

Lewis M. , The Big Short, 2011. Flash Boys, 2014 O' Malley C. : The story of the Eurobond Markets (ch. 10-11), 2015 CFA Institute® Code of Ethics and Standards of Professional Conduct CFA Institute® Standards of Practice Handbook, 2014 edition

Careers in Finance

ECTS : 3

Enseignants : SABRINA **BUTI**, Nadia **TORTEL**

Langue du cours : Anglais

Description du contenu de l'enseignement :

Graduate Assessment Process :

- description of recruitment process in Financial Services
- Competency-Based Interviews
- Assessment Centers, ...

Mock Interviews (interview training): A 3 minute pitch (to tell who you are and why you are the perfect candidate for a specific position) followed by Q&A and feedbacks Financial market seminar: 1 hour presentations by professionals

Compétences à acquérir :

The objective of the course is to prepare students to recruitment processes in Financial services. The first part concerns the graduate assessment process. It is followed by mock interviews. It is completed by a "financial markets" seminar that contains testimonials from former students from the master 203 who will come to share their experiences.

Coefficient : 1.5

Training for Interviews in English

ECTS : 3

Enseignant responsable : HELEN **EINSARGUEIX** (https://dauphine.psl.eu/recherche/cvtheque/einsargueix-helen-1)

Langue du cours : Anglais

Description du contenu de l'enseignement :

This English as a foreign language course not only attempts to improve the students' fluency in English but also explores the attitudes and expectations of a cross-cultural American and English job interview in finance. Rather than inculcating a litany of identical and stereotypical answers to interview questions, it will focus on revealing the personality and character of the candidate. Each student hones his English story-telling skills so as to persuasively communicate the singular passion and enthusiasm that drive him and make a memorable impression on the jury. Course outline A pragmatic and empirical approach that gives students ample opportunity to define themselves along the following lines, using self assessments and pragmatic hands on exercices:

- Tell me about yourself
- Emotion, passion & enthusiasm
- Brick walls & success stories
- Cross cultural experience
- Brain teasers
- Mock Interviews & group exercise preparation
- The virtual meeting
- Technical knowledge of the industry
- Group and individual presentation preparation

Compétences à acquérir :

Understanding the expectations of international recruiters, themselves and the body langage.

Mode de contrôle des connaissances :

The final exam is a presentation on a specific subject that will be given 3 weeks in advance and will measure the students' proficiency in English as well as their ability to present themselves in a professional capacity.

Coefficient : 1.5

Programming I : VBA and Python

ECTS : 3

Enseignant responsable : JUAN FELIPE **IMBET JIMENEZ** (https://amandri.github.io/)

Langue du cours : Anglais

Description du contenu de l'enseignement :

Practical and Theory sessions of VBA and Python with applications to finance, computer science, optimization, and decision sciences.

Compétences à acquérir :

Master VBA and Python Programming

Mode de contrôle des connaissances :

1 final exam and 1 complete assignment.

Coefficient : 1.5

Financial Derivatives

ECTS : 3

Enseignant responsable : AYMERIC **KALIFE** (https://dauphine.psl.eu/recherche/cvtheque/kalife-aymeric-1)

Langue du cours : Anglais

Description du contenu de l'enseignement :

The objective of this course is to give an all round comprehensive knowledge and understanding of the theory and the day-to-day use of derivatives contracts.
This course aims at “demystifying” key derivatives products, widely used to hedge existing market risks, to speculate on the future movements of market variables or more generally to taylor the return distribution of a portfolio. Participants will learn how banks and corporate treasuries use Financial Options alike in the management of risks, for trading, hedging and arbitrage and their role in the day-to-day running of the finances of businesses.
Starting from some basic knowledge of cash equity and equity derivatives market, and based on real option trade ideas capitalizing on a “nuanced” market view, it equips the audience with the skills to price and risk manage the most common and complex options, by explaining and dissecting the risks associated with trading a derivative from a risk/return/cost perspective by means of real life examples. For each option, from vanilla to exotics and structured products, this course makes clear why there is an investor demand, explains where the risks lie and how this affects the actual pricing, shows how best to hedge them.
The class uses MS Excel Spreadsheet applications and Visual Basic extensively, involving the use of market data and Equity Market Research publications.

Course outline
I Derivatives products features overview II Capitalizing on a “nuanced” view using derivatives III Arbitraging using derivatives IV Hedging using derivatives

- Derivatives Markets Overview
- Options Pricing framework
- Specific market situations where derivatives go beyond cash
- Tailoring a derivatives strategy to a specific market situation and fundamentals
- Capitalizing on a risk/return/cost profile using derivatives: from protection to yield enhancement derivatives strategies
- Asymmetry between market rise and fall: “the skew”
- Short-term crash fears: jumps and “fat tails”
- Long-term uncertainty: volatility term structure trades
- Dynamic hedging: “Delta hedging” using Futures (discrete hedging & transaction costs, Delta Greek features -vs. stock level, time, “shadow delta”)
- Static hedging: trading “Gamma and Vega hedging” using options (Gamma & Vega Greeks features, illustrations of Gamma-Vega hedging)
- P&L and hedging issues (Gamma-Theta P&L computation & pattern, impact of option maturity and Time decay, P&L and Options portfolio rebalancing frequency)
- Stylized facts of volatility empirics

Compétences à acquérir :

Binomial Tree, basic stochastic calculs

Mode de contrôle des connaissances :

Grading: Homeworks (trade idea on corporates, VBA project on options portfolio) + Final Exam

Coefficient : 1.5

Bibliographie, lectures recommandées :

John C. Hull: Options, Futures, & Other Derivatives, Prentice Hall Paul Wilmott: Derivatives: The Theory and Practice of Financial Engineering Sheldon Natenberg: Option Volatility and Pricing: Advanced Trading Strategies and Techniques Nassim Nicolas Taleb: Dynamic Hedging: Managing Vanilla and Exotic Options

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Fixed income I

ECTS : 3

Enseignant responsable : ARNAUD **LEVY RUEFF**

Langue du cours : Anglais

Description du contenu de l'enseignement :

The course aims to offer students a broad understanding of the fixed income products, both qualitatively and quantitatively. Relative prices of assets will be studied in the context of arbitrage relationship. The course will also present the market organization as well as its culture, and main characters. The design and implementation of ‘dealing room alike’ spreadsheets will illustrate the theories and models outlined. Particular emphasis will be given to pragmatic thinking in order for students to focus, in context, on the relevant details. Fixed income 101: starting up with the concept of actualization

Understand actualization curves and learn how to select the most appropriate one upon specific contexts.
  Fixed income at a glance: needs for financing, basic products and market organization
What you should know about issuers, investors, intermediaries and their respective interactions
  Bonds and loans: the center of the fixed income galaxy
Price and compute risks for the main styles of debt instruments using actualization and credit curves
  Hedging the risks with swaps and more: how to select and price interest rate and credit derivatives
Anticipate risks thanks to interest rate models. Use and price derivatives for hedging or speculation.
  Building and analyzing fixed income portfolios: a quantitative approach
Compare actuarial and statistical approaches for ex ante and ex post fixed income portfolio analysis
  Setting up fixed income arbitrage strategies: from the mindset to the know-how.
Understand the taxonomy of arbitrage strategies and get ready for practical implementation
  Nonlinear fixed income products: volatility and correlation products
Learn about the main fixed income nonlinear products and their pricing basics

Compétences à acquérir :

Technical knowledge (probabilities for fixed income, basic actuarial techniques, etc.) and market knowledge.

Mode de contrôle des connaissances :

80% Final written exam 20% involvement in class and workshops/homework

Coefficient : 1.5

Bibliographie, lectures recommandées :

Technical Fabozzi, F. J., The handbook of Fixed Income Securities, McGraw-Hill Education, 8th edition, 2012, 1840p. Hull, J. C., Fundamentals of futures and Options Markets, Pearson, 9th edition, 2016. Inspirational Thorp, E. O., A man for all markets, 2017, Random House, 416p. Zuckermann, G., The Greatest Trade Ever, 2009, Crown Business, 306p. Lowenstein, R., When Genius failed, 2001, Random House, 291p. Taleb, N., The Black swan: The Impact of the Highly Improbable, 2007, Random House, 436p.

International finance

ECTS : 3

Enseignant responsable : EVGENIA **PASSARI** (https://dauphine.psl.eu/recherche/cvtheque/passari-evgenia-1)

Langue du cours : Anglais

Description du contenu de l'enseignement :

The aim of this module is to provide a thorough foundation of the key concepts in international finance with a focus on

exchange rate economics. The module begins with an overview of the institutional characteristics of the foreign exchange market and subsequently examines the fundamental determinants of exchange-rate dynamics. By the end of the course the students will be familiar with both the theoretical models and the empirical evidence regarding exchange-rate behaviour. Emphasis will be given to the implications of these outcomes for exchange rate forecasting, international diversification and investment decisions. Course outline

- Week 1: Foreign Exchange Market Structure
- Weeks 2 and 3: Foreign Exchange Market Eficiency
- Weeks 4 and 5: Real Exchange Rate and Purchasing Power Parity
- Week 6: Balance of Payments
- Weeks 7 and 8: Exchange Rate Determination

Mode de contrôle des connaissances :

Mid-term (30%) and final exam (70%).

Bibliographie, lectures recommandées :

General Bekaert, G. and R.J. Hodrick (2009). International Financial Management. New Jersey: Pearson Education. Sarno, L. and M.P. Taylor, (2005), The Economics of Exchange Rates, Cambridge University Press. Specific Week 1

- Bekaert and Hodrick, Ch. 2 & 3.
- King, M.R., Osler, C. and D. Rime (2012). Foreign Exchange Market Structure, Players and Evolution, in James, Marsh and Sarno (eds.), Handbook of Exchange Rates, Wiley.
- Foucault, T., Kozhan R. and W. Wah Tham (2017). Toxic Arbitrage Review of Financial Studies, 30, 1053-1094.

Weeks 2 and 3

- Bekaert and Hodrick, Ch. 6 & 7.
- Akram, Q.F., Rime, D., and L. Sarno (2008). Arbitrage in the Foreign Exchange Market: Turning on the Microscope, Journal of International Economics, 76, 237-253.

Weeks 4 and 5

- Bekaert and Hodrick, Ch. 8 & 9.
- Marsh, I., Passari, E., and L. Sarno (2012). Purchasing Power Parity in Tradable Goods, in James, J., L. Sarno and I.W. Marsh (eds.) Handbook of Exchange Rates, London: Wiley.

Week 6

- Bekaert and Hodrick, Ch. 4 & 5.
- Rey, H. (2013). Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence, Federal Reserve Bank of Kansas City Economic Policy Symposium.

Weeks 7 and 8

- Bekaert and Hodrick, Ch. 10.
- Mark N. C. (1995). Exchange Rates and Fundamentals: Evidence on Long-Horizon Predictability, The American Economic Review, 85, 201-218

Investment and financial markets

ECTS : 6

Enseignant responsable : FABRICE **RIVA** (https://dauphine.psl.eu/recherche/cvtheque/riva-fabrice)

Langue du cours : Anglais

Description du contenu de l'enseignement :

The objective of this course is to introduce students to the key concepts required to understand how capital markets (primarily equity markets) function. The course is organized into five parts.

Part 1 examines the organization of trading. The structure of European stock exchanges has evolved significantly over the past 20 years, driven by advances in information technology and changes in the European regulatory environment. Open-outcry systems have gradually been replaced by computer-assisted, continuously operating trading platforms. New trading protocols such as Multilateral Trading Facilities (MTFs) and Dark Pools have emerged; real-time remote access has become standard; high-frequency trading has grown rapidly with latency now below 1 millisecond, while trading costs have fallen sharply.

Financial intermediation has also evolved. The Investment Services Directive (ISD) reshaped the European regulatory

landscape by ending the mandatory concentration of orders on a single exchange. Former national monopolies now compete with new entrants, and Euronext's market share has fallen from 100% to less than 50%. Major European companies are now traded across multiple venues. To understand these developments, students must first grasp the sources of transaction costs (both explicit and implicit) and the concept of liquidity. These topics will be covered in detail, with a particular focus on the evolution of Euronext.

Part 2 introduces the core concepts of return, risk, and the optimization of the risk-return trade-off through efficient portfolios. After defining returns (discrete and continuous) and presenting common risk measures (such as volatility and Value at Risk), the course studies the joint behavior of assets within portfolios. This leads to an understanding of diversification benefits and forms the basis for computing efficient portfolios using Markowitz's program and tracing the efficient frontier.

Part 3 explores how investors incorporate risk into their decisions. It explains how to measure risk aversion and how it influences market equilibrium. This section derives the Capital Asset Pricing Model (CAPM) and, after discussing its limitations, introduces multi-factor pricing models, notably the Fama–French three-factor model.

Part 4 is more applied. It shows how the concepts developed in the earlier parts can be used for stock selection and for evaluating the performance of portfolio managers.

Part 5 studies how information is incorporated into asset prices. The seemingly erratic behavior of stock prices may raise doubts about their informational content: Do prices truly convey valuable information? Why should firms choose to be publicly traded? In an informationally efficient market, the expected gain from price forecasting is zero, but is this actually the case? Although market anomalies (abnormal returns) do exist, closer examination shows that many can be interpreted as compensation for hidden costs (e.g., transaction or information costs) or for bearing additional risks.

Compétences à acquérir :

Course objectives:

- Analyze the functioning of markets, trading costs, and liquidity
- Apply the concepts of risk, diversification, and portfolio theory to real situations
- Develop and work with asset pricing models
- Use asset pricing models for stock picking, asset allocation, and fund performance measurement
- Examine how information is incorporated into prices and evaluate price behavior in efficient markets

Pré-requis recommandés

Though there will be brief reminders during the classes of the mathematical and statistical tools that are needed to understand the various concepts used in the course, students must have some prior knowledge of the following concepts: calculus (derivatives, Taylor expansion), probability (discrete and continuous variables, moments, covariance, correlation), statistics (sample estimators, linear regression), linear algebra (matrix operations) and optimization (Lagrangian).

Mode de contrôle des connaissances :

12 3-hour classes. Practical examples and solutions to exercises in class.
Grading: mid-term exam (40%) and final exam (60%).

Coefficient : 1

Bibliographie, lectures recommandées :

Class handouts are downloadable from course webpage on MyCourse Bodie Z., A. Kane, A. Marcus, 2014. Investments. McGraw-Hill, 10th ed.Harris, L., 2003. Trading and Exchanges: Market Microstructure for Practitioners. Oxford University Press. Harris, L., 2003. Trading and Exchanges: Market Microstructure for Practitioners. Oxford University Press. Hillier D., Grinblatt M. and S. Titman, 2011. Financial Markets and Corporate Strategy. Irwin-Mc Graw Hill, 2nd European edition. Madura, J. 2015. Financial Markets and Institutions. South Western, 11th ed.

Financial Econometrics I

ECTS : 3

Enseignant responsable : GAELLE **LE FOL** (https://dauphine.psl.eu/recherche/cvtheque/le-fol-gaelle)

Langue du cours : Anglais

Description du contenu de l'enseignement :

This course is an introduction and/or refresher course in Econometrics that focuses on techniques for estimating regression models, on problems commonly encountered in estimating such models, and on interpreting the estimates. The goal is to provide participants with the basic skills and knowledge necessary to undertake empirical research and to

prepare them to the advanced course in Econometrics of Financial Markets. If Gretl will be the econometric software used in the course, it is possible to use Python or R.
Course outline

- How to build an econometric model and how to use it?
- The (simple and multiple) linear regression model
- Inference, hypothesis testing and prediction
- Specification and diagnostic testing (heteroskedasticity, autocorrelation, model specification ...)
- Dealing with autocorrelation and heteroskedasticity
- Selection criteria, and model selection
- OLS Adaptation and beyond (outliers, dummies and piecewise regressions, revisiting explanatory variables)
- Alternative to OLS (2 Stage Least Squares, Maximum Likelihood, Generalized Least Squares, Quantile regression)

Compétences à acquérir :

Theoretical and practical knowledge of linear regression models estimation technics. Being able to set up an econometric analysis.

Pré-requis obligatoires

Mathematics and Statistics (bachelor level)

Pré-requis recommandés

First course in programming

Bibliographie, lectures recommandées :

- ADKINS L. C., Using gretl for Principles of Econometrics, Version 1.041, August 2018, Free copy;
- BROOKS C., Introductory Econometrics for Finance, Second Edition, 2019, , 4th Edition, Cambridge University Press, 724 pages
- CARTER HILL R., W. E. GRIFFITHS and GUAY C. LIM, 2018, Principles of Econometrics, 5th Edition, John Wiley & Sons, 912 pages
- GELMAN A., J. HILL and A. VENHTARI, 2021, Regression and Other Stories, 1st Edition, Cambridge University Press, 2021;
- GUJARATI D., Basic Econometrics, McGraw Hill Higher Education; 5th Revised edition edition, 2009

Pre-requisites:

- ANDERSON, D., D. SWEENEY, T. WILLIAMS, J. CAMM, and J. COCHRAN, 2019, Statistics for Business & Economics, 14th Edition, Cengage Learning, 1120 pages
- JACQUES, J., 2018, Mathematics for Economics and Business, 9th Edition, Pearson, 752 pages;
- LE FOL, G., 2022, A (Very) Short introduction to Gretl using scripts, Mimeo, 6 pages

SEMESTER 2

Enseignements Obligatoires

Internship

ECTS : 6

Enseignant responsable : SABRINA **BUTI** ()

Langue du cours : Anglais

Description du contenu de l'enseignement :

Students of the Master 203 (M1-level) are available for internships beginning in January. A minimum of 4 months of professional internship is required or equivalent (Summer internships are considered as equivalent).

Compétences à acquérir :

Master Thesis

ECTS : 24

Enseignant responsable : SABRINA **BUTI** ()

Langue du cours : Anglais

Description du contenu de l'enseignement :

The goal is to write a Master thesis that links what you have learned during your degree, what you will learn in the books or journal articles on the subject you have chosen to write about, and what you will learn from your experience with professionals in the context of your courses and/or internship.

Compétences à acquérir :

Students are expected to review and delineate a subject, to identify an original angle and develop an argument, to construct a relevant bibliography, to synthesize the important documents, to make use of both theoretical (studied in class) and practical knowledge (gained through your internship), and to think critically and to suggest directions for further research. And finally, to produce an interesting, well-written and synthetic document.

Coefficient : 15