

Année universitaire 2024/2025

Parcours International - 304 - 2ème année de master

Crédits ECTS : 60

LES OBJECTIFS DE LA FORMATION

Le parcours international - 304 au sein du Master Economie et Finance répond à l'internationalisation croissante du Master avec la mise en place récente de **quatre doubles diplômes** avec l'Université Goethe de Francfort, l'Université Ca'Foscari de Venise, l'Université de Bologne (UNIBO) et l'Université LMU de Munich.

Les étudiants dauphinois du Master Economie et Finance admis dans ce parcours peuvent ainsi obtenir un double diplôme dans une des universités partenaires. Les étudiants qui optent en deuxième année de Master pour :

- la Goethe-Universität de Frankfurt am Main obtiennent *le Master of Science in Money and Finance*,
- la Ca' Foscari de Venise intègrent *le Master in Economics, Finance and Sustainability*.
- UNIBO de Bologne intègrent *le Master Greening Energy Market and Finance*
- LMU de Munich intègrent *le Master in Financial and Insurance Mathematics*

En parallèle, les étudiants allemands et italiens admis au sein de ce programme intègrent à Dauphine les cours en anglais du Magistère Banque Finance Assurance (BFA) et du parcours Énergie, Finance, Carbone.

Notre formation vise à compléter la formation académique dauphinoise obtenue en 1re année de Master par une ouverture et une expérience internationale extrêmement recherchées par les recruteurs que ce soit en France, en Europe, et plus généralement à l'international. La validation des diplômes de chacune des deux universités vient consacrer un parcours exigeant et reconnu dans le monde académique et professionnel international. Tous les parcours sont intégralement enseignés en anglais.

A l'issue de la formation, les titulaires du diplôme auront acquis les compétences leur permettant de :

- Assimiler des connaissances approfondies avec une spécialisation en économie quantitative, en finance d'entreprise et/ou en finance de marché
- Développer une ouverture à l'international extrêmement valorisée par les recruteurs
- Maîtriser des méthodes quantitatives (économétrie, méthodes de simulation, data science) et des outils informatiques (Matlab, Bloomberg, Python)
- Être à la pointe des innovations technologiques (fintech, IA, science des données) ainsi que des enjeux ESG dans le monde de la finance

La formation dispensée par le diplôme permet d'accéder à une extrême diversité de métiers tant en finance de marché qu'en finance d'entreprise.

PRÉ-REQUIS OBLIGATOIRES

Ce parcours est accessible uniquement pour :

- Les étudiants dauphinois ayant validé la 1re année de Master Economie et Finance
- Les étudiants étrangers de l'Université Goethe de Francfort, l'Université Ca Foscari de Venise, de l'université de Bologne (UNIBO) et de Munich (LMU) après une première année de Master dans leur université d'origine.

Les critères de sélection sont :

1. Les résultats académiques
2. Les connaissances linguistiques
3. La motivation
4. L'engagement social, culturel et sportif

PROGRAMME DE LA FORMATION

- Semestre 3
 - Bloc optionnel 30 ECTS à choisir
 - Economie de l'énergie et de l'environnement (en anglais)
 - Economie du changement climatique (en anglais)
 - Modélisation empirique des marchés de l'électricité et du gaz (en anglais)
 - Evaluation des risques et analyse d'investissement dans les marchés de l'énergie (en anglais)
 - Politiques de l'énergie (en anglais)
 - Finance verte : Finance de marché et financement de projet (en anglais)
 - Saving and the financing of the real economy
 - Macro-economy for market participants
 - Leadership en finance et Entrepreneuriat
 - Exotic Options et produits structurés
 - Python pour l'analyse de données financières en temps réel
 - Investing on financial markets
 - Corporate strategy
 - Business simulation and Entrepreneurship
 - SAS/R/SQL - Data analysis-Data Modeling
 - Behavioral finance
- Semestre 4
 - Bloc optionnel 6 ECTS à choisir
 - Advanced Econometrics
 - APT model and methodology
 - Credit default risk
 - Structured products
 - Corporate rating
 - ESG Investment
 - Commodity markets
 - Modelization in renewable energy
 - Internship Report
 - The impact of Big Data and Artificial Intelligence on Finance
 - Dérivés énergétiques
 - Géopolitique des marchés de l'énergie
 - Global Climate Finance
 - Financial modeling in renewable energy
 - Obligatoire 24 ECTS à choisir
 - Research Master Thesis
 - Profesional Master Thesis

DESCRIPTION DE CHAQUE ENSEIGNEMENT

APT model and methodology

ECTS : 3

Description du contenu de l'enseignement :

Rétrospective historique des Modèles de Risque et Théories sous-jacentes

Concepts et Mathématiques des indicateurs de risque généraux avec APT (Volatilité - Tracking Error - Beta - Corrélation...)

Concepts et Mathématiques des indicateurs de risque avancés avec APT (VaR Monte Carlo - Attribution de risque - Stress

Testing...)

Cas pratiques d'utilisation des indicateurs de risque pour analyser et gérer les risques de portefeuilles en société de gestion

Evaluation des risques et des performances des fonds

Cas pratiques d'utilisation du risque pour gérer, optimiser et construire des portefeuilles : gestion quantitative avec des préférences explicites, intégration de critères ESG...

Compétence à acquérir :

Suite à la formation l'étudiant aura acquis une compréhension du modèle de risque et de la méthodologie APT.

Le cours vise aussi à montrer l'intérêt de l'approche multifactorielle statistique APT pour:

- comprendre, analyser et gérer les risques de portefeuilles d'actifs financiers.
- utiliser les concepts de risque pour gérer des portefeuilles en société de gestion avec une approche quantitative.

Mode de contrôle des connaissances :

Participation

Travail en groupe

Examen sur table

Bibliographie, lectures recommandées :

Allocation d'Actifs - Théorie et pratiques (Chapitre 6 - Gestion du risque)

Advanced Econometrics

ECTS : 3

Description du contenu de l'enseignement :

Sujet 1 : Mesures de risque de marché (Volatilité, Value-at-Risk et Expected Shortfall) – modèles ARCH/GARCH univariés

Sujet 2 : Tests de validation des mesures de risque (couverture non-conditionnelle, conditionnelle, test d'indépendance, super exception)

Sujet 3 : Risque systémique et régulation macroprudentielle (Absorption ratio, MES, SRISK, Delta CoVaR et établissements bancaires d'importance systémique) – modèles ARCH/GARCH multivariés (CCC, DCC, BEKK)

Compétence à acquérir :

Ce cours a pour objectif de développer les compétences techniques des étudiants (applications sous Python) afin qu'ils soient capables de manipuler facilement des séries de rendements financiers. A la fin du cours, l'étudiant est donc capable d'identifier un processus sous-jacent sur les rendements financiers lui permettant de construire une mesure de risque de marché comme le demande le comité de Bâle dans ses accords éponymes qui réglementent le secteur bancaire. Au-delà, des aspects pratiques, ce cours développe les différents aspects de la réglementation prudentielle.

Mode de contrôle des connaissances :

Examen final en salle machine.

Bibliographie, lectures recommandées :

Hull, J. C., 2015, Risk Management and Financial Institutions, 4th Edition, Wiley Finance.

Jorion, P., 2011, Financial Risk Management Handbook, Wiley Finance

Roncalli, T., 2009, La gestion des risques financiers (2e édition).

Behavioral finance

ECTS : 3

Business simulation and Entrepreneurship

ECTS : 3

Description du contenu de l'enseignement :

In this class, students will be given an opportunity to handle in autonomy a professional project from start to finish. They will have to choose either to create a business (from the idea to the first investor pitch) or to handle a strategy consulting case. In both the entrepreneurship or the consulting track, they will have to manage their time and work, but to choose the skills that will

be relevant to learn for the project they will have chosen. The professor will act as a manager/coach and will give them advice along the way, but the final decision will always be their own. He will also lead a few workshops on different themes (presentation techniques, entrepreneurship, etc.) to help them tailor their approach.

At the end of the year, they will have to present their work in front of a jury that will replicate the professional setting they will have been emulating.

Compétence à acquérir :

- Entrepreneurship theory (from idea to execution)
- Business analysis skills (Market study, Business plan, etc.)
- Project management skills (autonomy, responsibility, time management, etc.)
- Presentation skills (build a presentation, choose the information, etc.)

Mode de contrôle des connaissances :

Presentation in front of a jury at the end of the semester of the end result, that will be evaluating the quality of the work done by the students, how this presentation would have been received in front of investors or in a professional setting, the overall technical and thematic knowledge displayed, and the level of maturity observed during the semester.

Commodity markets

ECTS : 3

Description du contenu de l'enseignement :

Raison d'être of commodity futures markets : three different approaches.
Relationships with cash commodity markets and other asset classes.
Examples, hedging and trading strategies.

Compétence à acquérir :

Market mechanisms, instruments (futures and options) and the basis (difference between the cash price and the future price).

Mode de contrôle des connaissances :

Written exam following the lecture.

Corporate rating

ECTS : 3

Corporate strategy

ECTS : 3

Credit default risk

ECTS : 3

Description du contenu de l'enseignement :

1. Idiosyncratic credit risk
2. Credit portfolio risk
3. Monte Carlo simulations for credit portfolios
4. Risk contributions and portfolio management
5. Collateralized debt obligations
6. Advanced Monte Carlo simulation techniques

Compétence à acquérir :

- Understand the definition of single name credit default risk and how it is measured
- Understand the risk aggregation problem and be able to program a Monte Carlo simulator for credit portfolios
- Understand the risk allocation problem and be able to calculate risk contributions to portfolio measures of risk
- Understand how CDS & CDOs can be used to manage credit portfolio risk and be able to calculate their impact by Monte Carlo simulation
- Understand the concept of Monte Carlo variance reduction and be able to implement importance sampling

Mode de contrôle des connaissances :

- Graded project
- Class participation

Bibliographie, lectures recommandées :

- **Introduction to Credit Risk Modeling** (Chapman and Hall/CRC Financial Mathematics Series) 2nd Edition by Christian Bluhm, Ludger Overbeck and Christoph Wagner
- **Monte Carlo Methods in Financial Engineering** (Springer) by Paul Glasserman
- **Quantitative Risk Management** (Princeton Series in Finance) by Alexander McNeil, Rudiger Frey and Paul Embrechts

Dérivés énergétiques

ECTS : 3

ESG Investment

ECTS : 3

Economie de l'énergie et de l'environnement (en anglais)

ECTS : 6

Description du contenu de l'enseignement :

- Economie de l'énergie et de l'environnement

- Transmission de connaissances fondamentales en économie de l'énergie et de l'environnement

The class will provide students with an overview of key concepts in both environmental economics and energy economics. It should enable students to apply these concepts to basic policy analysis.

1. Externalities, Fixed Costs and Information (Private, public goods, club goods and externalities, informational complexity, transaction costs and the Coase theorem)
2. The Optimal Internalisation of Externalities (The Pigouvian approach, instruments for internalisation (taxes, standards, emission trading etc.), efficiency considerations of different internalisation measures, the distributional impacts of different measures)
3. Dimensions of Social Cost (Categories of social costs, risk, uncertainty and real option value)
4. The Measurement of Externalities (Measuring abatement cost, methods to measure social costs I + II)
5. Special Topics: Distribution and Energy Efficiency (Compensating vs. equivalent variation: the impact of distribution on social costs; Energy efficiency and the rebound effect)
6. Electricity Markets I + II (Sustainable development in the energy sector, the functioning of electricity markets and price formation, working with screening curves, the investment challenge according to Joskow, capacity remuneration mechanisms (CRMs), storage and demand response)
7. The Full Costs of Low Carbon Electricity Systems (Projected costs of generating low carbon electricity, full costs and system costs of different generation technologies)
8. The Interaction of Carbon and Electricity Markets (Carbon prices and electricity prices: theories of price formation in the carbon market, causality between CO2 prices and different energy variables, rents of electricity producers due to carbon pricing: grandfathering vs. auctioning)

Compétence à acquérir :

Compétences en économie de l'énergie et de l'environnement ;

The class will provide students with an overview of key concepts in both environmental economics and energy economics with a special focus on the performance of European electricity markets. The class will develop those notions in a framework alternating between private and social utility maximisation.

Mode de contrôle des connaissances :

Mémoire sur un de dix sujets proposés en intégrant les acquis du cours

Bibliographie, lectures recommandées :**Bibliographie**

Arrow, Kenneth J. (1970). "The Organization of Economic Activity: Issues Pertinent to the Choice of Market versus Non-Market Allocation", in Robert H. Haveman and J. Margolis (eds.), *Public Expenditure and Policy Analysis*. Chicago.

Barde, Jean-Philippe (1991), *Économie de l'environnement*, Presses universitaires de France, Paris.

- Baumol William and W. Oates (1988). *The Theory of Environmental Policy*. New York: Cambridge University Press.
- Coase, Ronald (1997), *The Firm, the Market and the Law*, Chicago: University of Chicago Press.
- Coase, Ronald H. (1960). "The Problem of Social Cost", *Journal of Law and Economics* 1(1): 1-21.
http://www.ecosystemvaluation.org/dollar_based.htm
- Freeman, Myrick (1979). *The Benefits of Environmental Improvements: Theory and Practice*. Baltimore: Johns Hopkins University Press.
- Hicks, John R. (1932, 1963, *The Theory of Wages*, London: Macmillan.
- Joskow, Paul L. (2006), "Capacity payments in imperfect electricity markets: Need and design", *Utilities Policy* (16)3: 159-170.
- Joskow, Paul L. (2007), "Competitive Electricity Markets and Investment in New Generating Capacity", in Dieter Helm (ed.), *The New Energy Paradigm*, Oxford University Press, pp. 76-121 also at <http://economics.mit.edu/files/1190>.
- Keppler, Jan Horst (2019), *The Costs of Decarbonisation: System Costs with High Shares of Nuclear and Renewables*, with Marco Cometto, OECD, Paris.
- Keppler, Jan Horst (2018), *The Full Costs of Electricity Provision*, OECD, Paris.
- Keppler, Jan Horst (2017), « Rationales for Capacity Remuneration Mechanisms: Security of Supply Externalities and Asymmetric Investment Incentives », *Energy Policy* 105, 2017, p. 562-570.
- Keppler, Jan Horst (2011), *Carbon Pricing, Power Markets and the Competitiveness of Nuclear Power*, with Claudio Marcantonini, OCDE, Paris.
- Keppler, Jan Horst (2010), « Causalities between CO2, Electricity, and other Energy Variables during Phase I and Phase II of the EU ETS » with M. Mansanet-Batailler, *Energy Policy* 38(7): 3329-41.
- Keppler, Jan Horst (2010), « The Impact of the EU ETS on Prices and Profits in the Electricity Sector » with M. Cruciani, *Energy Policy* 38(8): 3280-90.
- Keppler, Jan Horst (2010), « Going with Coase against Coase: The Dynamic Approach to the Internalization of External Effects », in *The Economics and Finance of Sustainable Development*, Economica, Paris, p. 118-139.
- Keppler, Jan Horst (2000), « Prices, Technology Policy and the Rebound Effect » with F. Birol, *Energy Policy* 28 (6-7), p. 457-469.
- Keppler, Jan Horst (1998), « Externalities, Fixed Costs and Information », *Kyklos* 52 (4), p. 547-563.
- Keppler, Jan Horst (1992), « Abgabentariffierung vor dem Hintergrund konkreter Gesetzesvorhaben » with A. Eberhardt, *Zeitschrift für Angewandte Umweltforschung* 5(3), 1992, p. 360-373.
- Léautier, Thomas-Olivier (2013), "The Visible Hand: Ensuring Optimal Investment in Electric Power Generation", IDEI Working Paper 605, <http://idei.fr/display.php?a=22628>.
- Lind, R. C., Ed. (1982), *Discounting for Time and Risk in Energy Policy*, Washington, DC: Resources for the Future.
- Pearce, D. W. and R. K. Turner (1990), *Economics of Natural Resources and the Environment*, Baltimore, The Johns Hopkins University Press.
- Pigou, Arthur Cecil. 1920. *The Economics of Welfare*. 2nd Edition. London: Macmillan.
- Stoft, Steven (2002), *Power System Economics*, Piscataway (NJ), IEEE Press.
- Viscusi, Kip (2005), "The Value of Life", Harvard Law School, Discussion Paper No.

Economie du changement climatique (en anglais)

ECTS : 6

Description du contenu de l'enseignement :

Présentation générale

Le changement climatique est principalement lié à un modèle énergétique historiquement basé sur les énergies fossiles (charbon, pétrole et gaz naturel) depuis la première révolution industrielle. Limiter les principaux effets du changement climatique (événements climatiques extrêmes, pollution atmosphérique, élévation du niveau de la mer, ...) et leurs coûts économiques implique de déployer des moyens énergétiques bas carbone (éolien, solaire, ...), d'améliorer l'efficacité énergétique et, plus largement, de transformer l'organisation de nos sociétés.

Dans ce contexte, le cours examine :

- La théorie économique, les perspectives empiriques et l'économie politique de l'offre et de la demande d'énergie, tant pour les combustibles fossiles que pour les sources d'énergie renouvelables.

- Les politiques publiques affectant les marchés de l'énergie, y compris la taxation, la régulation et la dérégulation des prix, l'efficacité énergétique et le contrôle des émissions.
- Une attention particulière sera accordée aux politiques économiques telles que les taxes sur le carbone et les permis d'émission négociables, ainsi qu'aux problèmes liés au remplacement des combustibles fossiles par de nouvelles technologies énergétiques.

Compétence à acquérir :

Compétences en économie du changement climatique

Mode de contrôle des connaissances :

Projet final en groupe (70%) et fiche d'analyse d'un texte théorique (30%)

Bibliographie, lectures recommandées :

Tous les matériaux sont fournis dans le cadre du cours

Evaluation des risques et analyse d'investissement dans les marchés de l'énergie (en anglais)

ECTS : 6

Description du contenu de l'enseignement :

- Evaluation des risques et introduction au financement de projet dans les marchés énergétiques
- Transmission de connaissances fondamentales en évaluation des risques et introduction au financement de projet dans les marchés énergétiques

Compétence à acquérir :

Compétences en évaluation des risques et introduction au financement de projet dans les marchés énergétiques

Exotic Options et produits structurés

ECTS : 3

Description du contenu de l'enseignement :

This course considers Exotic options and Structured Products based on Equity Derivatives, and focuses on the valuation techniques used to price them. Class is using a learning by doing concept. It is divided into 8 sessions of three hours each, and alternates the teaching of the theory used and practical applications. Local and stochastic volatility frameworks are defined and used to price those instruments by using Monte-Carlo simulations, using Excel®. The hedging of such instruments is considered.

Practical examples are used to build from scratch valuation tools, using Excel®. The course reviews the calibration of models to market data as well as building up local and stochastic volatility surfaces.

Key words : Exotics, structured, equity derivatives, local volatility, stochastic volatility, Monte-Carlo simulation, correlation, hedging costs.

Compétence à acquérir :

Hability to price any Equity Derivatives instrument, even with a complicated pay-off, using Excel®.

Mode de contrôle des connaissances :

A final project consisting in the pricing of an Equity Derivatives Structured product is the basis for the grading of this course. Each student has to value a specific instrument. However, the type of this instrument is the same for all students, except that the underlying asset(s) is different. Attendance to the course is mandatory.

Bibliographie, lectures recommandées :

Quantitative Finance. P.Willmott.

Finance verte : Finance de marché et financement de projet (en anglais)

ECTS : 6

Description du contenu de l'enseignement :

Project Finance

1. Introduction to Project Finance (1/2)

- a. Comparison with corporate finance
- b. Risks analysis
- c. Impact on contractual framework
- d. Overview of the various lenders

Debt raising process and syndication

2. Introduction to Project Finance (2/2)

- a. Introduction to financing documentation
- b. The investors' perspective
- c. Job industry

Case study: offshore wind financing & refinancing

3. Cashflow modeling

- a. Introduction to financial model
- b. Key ratios

Modeling exercise on excel

4. Speakers from a developer/bank and/or advisors to present various points of view and perspectives on PF and Q&A sessions

Market Finance

Chapter I. Introduction and Reminders

The aim of this chapter is to (i) review the fundamentals as regards the functioning of financial markets and (ii) take stock of the impact of human activities on the environment, focusing in particular on climate change.

Chapter II. The material effect of environmental risks on financial markets

The chapter reviews recent studies on the physical and environmental transition risks, socially responsible investment and its motivations (Riedl and Smeets (2017)) and the major challenges of environmental finance, especially regarding regulatory projects and the design of guidelines to good practices (TCFD (2017), HLEG (2018)). The academic literature on companies' cost of capital in relation to their environmental impact is reviewed (Derwall et al. (2005), Renneboog et al. (2008), Sharfman and Fernando (2008), Capelle-Blancard and Laguna (2010), ElGhoul et al. (2011), Chava (2014), Kruger (2015), In et al. (2018), Capelle-Blancard et al. (2019), Zerbib (2020)).

Chapter III. Investors' environmental and sustainable practices

This chapter deals with the practices of institutional investors of several kinds (Kruger et al. (2018)): insurance companies, pension funds, banks and asset managers (Andersson et al. (2016)). It focuses on various methods of sustainable investment, such as exclusion (Hong and Kacperczyk (2009)), ESG screening, corporate engagement (Dimson et al. (2015) and Hoepner et al. (2018)), and impact investing. It includes an analysis of telecoupling and investors' responsibility in activities with a high environmental impact (Scholtens (2017) and Galaz et al. (2018)) as well as investors' ability to make corporate practices greener (Heinkel et al. (2001)).

Chapter IV. Financing green assets

Here the focus is on the various securities available for financing green projects: green bonds (Flammer (2018), Paraque and Revelli (2019), Zerbib (2019)), project bonds, sustainable infrastructure, real estate, green funds, and labels.

Chapter V. Measuring the environmental impact of investments

Presentation of the metrics available, their strengths and limitations: the carbon footprint, carbon intensity, green share, brown share and stranded asset issues (Trinks et al. (2018)), avoided emissions, 2-degree alignment, and the Net Environmental Contribution (NEC).

Chapter VI. Central Banking and Green Finance

This chapter deals with the reasons why central banks are concerned about the environmental impact of investments and financial markets, their ability to integrate the management of this additional systemic risk into their mandate (see Benoît Coeure's speech at the ECB in November 2018, Campiglio (2016)) and the limitations of this exercise.

Compétence à acquérir :

This course is designed to provide students with the tools to understand and support the greening of the financial system by articulating concrete examples, academic papers, and latest regulations.

Skills acquired during the course:

- Understanding the mechanisms at play in project finance applied to green assets
- Understanding of main climate risks underlying financial assets
- Identification of the environmental impact of financial assets
- Knowledge of various methods and practices of environmental investing
- Knowledge of the latest environmental finance regulations

Mode de contrôle des connaissances :Project Finance

To be described

Market Finance

Essay and Oral presentation

Quizz

Financial modeling in renewable energy

ECTS : 3

Global Climate Finance

ECTS : 3

Géopolitique des marchés de l'énergie

ECTS : 3

Internship Report

ECTS : 6

Investing on financial markets

ECTS : 3

Description du contenu de l'enseignement :

The course aims at grasping key financial asset management principles and concepts, their goals, major means, common tools & constraints, in a search of a "reasonably optimal" portfolio.

I-A review of investment processes, techniques and models over time

II-Investment Process: investment philosophy, investment universe, asset selection, portfolio construction, risk monitoring, reporting

III-Diversification, factors & risk premia

IV-Risks & return assessment (VaR, CVaR, EVT, major ratios)

V-Directional & non-directional strategies for relative or absolute expected returns

VI-SRI, ESG and other non-financial inputs

VII- Case studies (investment themes & asset managers)

Compétence à acquérir :

Understanding asset management's purpose and optimization.

Understanding uncertainty reduction techniques to improve investment decisions over time.

Portfolio construction & risk-return analyses.

Mode de contrôle des connaissances :

Two team-based class presentations: a first one about a pre-approved theoretical subject, and a second one being a feedback following a meeting with a CIO or a CEO of a Paris-based asset management company (meetings arranged by the lecturer)

Bibliographie, lectures recommandées :

Not easy: Expected Returns - An Investor's Guide to Harvesting Market Rewards, by Antti Ilmanen, Wiley Finance (2011)

Bedside reading: The Intelligent Investor, subtitled "The definitive book on value investing", by Benjamin Graham, Harper Business Essentials (2006)

Easier and entertaining: Fooled by randomness, subtitled "The hidden role of chance in life and in the markets" by Nassim Taleb, Penguin Books (2007)

Leadership en finance et Entrepreneuriat

ECTS : 6

Description du contenu de l'enseignement :

In this class, students will be able to reflect on the core qualities any leader should have. They will learn the role and the place of a leader in a team and in an organization, as well as the sources of leadership and how leadership can be exercised. They will discover some of the tools at a leader's disposal to face the many challenges they face (stress management, negotiation, effective communication, emotional intelligence, diversity, and inclusion, etc.), and will be able to practice with them. Mostly, they will be able to think about what leaders they will want in their careers and which kind of leader they will want to become. To achieve this goal, students will be prompted to discover these skills through case studies, articles and videos analysis, research, presentations, and hands-on practice. The class is led with an MBA style, so students are advised that their participation and their contributions are key in building the class.

Compétence à acquérir :

- Roles and responsibilities of a leader (manager/leader, organizations theory, leaders and learning, leaders & strategy, etc.)
- Dealing with Stress & Pressure (Definition of stress, "Flight, Fight, Freeze" model, Baseline Stress model, "Triune Brain" model, breathing techniques, imported stress, Circle of Safety, managing one's stress, managing other peoples stress, managing upwards, difference between stress and pressure, etc.)
- Communicating and Engaging around one's vision (intro to Public Speaking, transmitting a clear message, active listening, giving feedback, non-verbal communication, Golden Circle model, Radical Candor model, etc.)
- Understanding and Adapting to differences (DISC, MBTI, diversity leadership, cultural intelligence, etc.)
- Building a LT vision (negotiation theory, emotional intelligence, Infinite games, Teal organizations, etc.)
- Growing as a leader (vulnerability, authenticity, empathy, personal developemnt etc.)

Mode de contrôle des connaissances :

The grade is divided into three thirds:

- participation grade: quality of the interventions during class as well as the performance with some exercises;
- group grade: the class will be divided into 4 groups that will face each other in different challenges and presentations, earning points for the team (each member of the group gets the same grade at the end of the year);
- essay: at the end of the semester, students will be prompted to reflect on what Leadership means to them through a written personal essay.

Macro-economy for market participants

ECTS : 3

Description du contenu de l'enseignement :

I. Comment les marchés suivent la conjoncture : un cadre d'analyse II. Les marchés de taux d'intérêt III. Les marchés boursiers IV. Les marchés des changes

Ce cours vise à permettre aux étudiants de faire le lien entre les évolutions macroéconomiques et celles des marchés financiers.

Compétence à acquérir :

À la fin du cours les étudiants devront avoir une meilleure compréhension des interactions entre les marchés financiers et les

évolutions macro-économiques dans les économies avancées.

Mode de contrôle des connaissances :

Un exposé et éventuellement un devoir sur table permettent aux étudiants de travailler sur leur capacité de synthèse et leur capacité à analyser la conjoncture en lien avec l'actualité des marchés.

Bibliographie, lectures recommandées :

- Brender A. et F. Pisani (2001), *Les marchés et la croissance*, Economica, Paris. - Brender A. et F. Pisani (2010), *Global imbalances and the collapse of globalised finance*, CEPS, Brussels. - Gurkaynak R., B. Sack et E. Swanson (2004), « Do Actions Speak Louder Than Words? The Response of Asset Prices to Monetary Policy Actions and Statements », *Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System. - Kozicki S. et G. H. Sellon Jr. (2005): "Longer-Term Perspective on the Yield Curve and Monetary Policy", *Economic Review*, Federal Reserve Bank of Kansas city, Fourth Quarter - Wright J. H. (2007): "The yield curve and predicting recessions", *Staff working papers in the Finance and Economics Discussion Series*, Board of Governors of the Federal Reserve System.

Modelization in renewable energy

ECTS : 3

Modélisation empirique des marchés de l'électricité et du gaz (en anglais)

ECTS : 6

Description du contenu de l'enseignement :

Fondamentaux des marchés électricité et gaz

Modélisation empirique des marchés de l'électricité et du gaz

Analyse des principales source d'information pour la modélisation empirique des marchés de l'électricité et du gaz

Compétence à acquérir :

Compétences en modélisation empirique des marchés de l'électricité et du gaz

Mode de contrôle des connaissances :

Examen écrit

Bibliographie, lectures recommandées :

Creti-Fontini, 2019, Economics of Electricity: markets, competition and rules

Politiques de l'énergie (en anglais)

ECTS : 3

Description du contenu de l'enseignement :

Syllabus ([here](#))

This course focuses on energy policies through a research paper in energy economics. It helps students develop a critical understanding of the role of policy for sustainable energy transitions in developed and developing countries. The focus of the research paper project format is an economic question or issue in energy policies in a specific country or geographic area. Energy plays a key role in most of the world's environmental problems, from the global issue of climate change, through regional damage caused by acid rain, to poor local air quality. Energy markets throughout the world are evolving rapidly, with privatization, competition, market structure and regulation all prominent worldwide. Resource depletion of fossil fuels, the role of renewable energy and social inequities such as fuel poverty are central issues for sustainable development. The influence of energy issues on international politics and security has come into sharp focus with conflicts. The range of challenges for energy policy is diverse and exciting.

The Energy Policy Course is designed to review the broad interconnection between global economic growth, energy resource supply, geopolitical energy security, climate change and the development of energy policy, and to review the technologies and economics of energy production, transmission, distribution and consumption/conservation.

No topic-driven content is covered during the course; rather, the students investigated an issue and the course focused on the development of analytical thinking and research skills.

The organization of the seminar is the following:

1. Presentation of the fundamentals of energy policies, followed by a discussion of supply and demand policies. Throughout the discussion special emphasis will be put on energy policies and their interface with other policies ...
2. Determining a research focus: The goal is to nurture students through the process of narrowing their topic, developing

an effective economic research question and constructing a plan for their research.

3. Beginning analysis: At this stage students have narrowed their issue to a specific economic question and searched relevant literature for areas of potential contribution.
 4. & .5 Evaluating evidence: The final stage of the course is dominated by a one-to-one meeting with the instructor. The students are deep into the development of their evidence their questions become project specific. It is more advantageous for students to individually with the instructor as issues arise.
6. Bringing it all together: This final section of the course provides students with the opportunity to synthesize the components of their projects and receive a final set of reflective comments, from their peers.

Compétence à acquérir :

Through a research paper project, the course intends to provide students with the necessary skills to understand and analyze energy policies from different perspectives, ranging from users and energy firms to policymakers.

Upon successfully completing the course the student should be able to

- Realize how energy politics is designed and what it is supposed to achieve
- Define global and national energy policy factors which promote energy transition

These issues will be explored in weekly lectures and discussion sessions, several class discussions, and an individual research paper. Through active engagement and interaction in these pursuits by students from a variety of disciplines, a broad perspective on key energy policies issues will be acquired.

Mode de contrôle des connaissances :

Final individual paper (100%) . Th research paper project will be handed out at the end of the semester. It must be must a 15-20 page typed document and must be done individually. All the course is built to help student to write their research paper.

Bibliographie, lectures recommandées :

- **Transforming Energy Systems: Economics, Policies and Change** by Steven Fries | Nov 30, 2022, ELGAR
- **Economics of Power Systems: Fundamentals for Sustainable Energy** by Christoph Weber, Dominik Möst, et al. | Nov 14, 2022, SPRINGER
- **All About Renewable Energy: The Economics Of Renewable Energy Systems** by Roseanne Bisges | Jul 27, 2022
- *Energy Economics: Concepts, Issues, Markets and Governance* by Subhes C. Bhattacharyya | nov 14, 2020 (1st Edition., 2011
- MERITET S. & VAUJOUR J-B (2015), *Economie de l'Energie*, Topos, Dunod.

Profesional Master Thesis

ECTS : 24

Python pour l'analyse de données financières en temps réel

ECTS : 6

Research Master Thesis

ECTS : 24

SAS/R/SQL - Data analysis-Data Modeling

ECTS : 3

Saving and the financing of the real economy

ECTS : 3

Description du contenu de l'enseignement :

Analyse des mécanismes de l'accumulation patrimoniale des ménages et ses interactions avec l'économie

Etude en profondeur du marché de l'épargne hexagonal et du rôle de chaque produit existant pour le financement de l'économie

Compétence à acquérir :

Théorie de l'épargne

Mode de contrôle des connaissances :

exposés et examens écrit

Structured products

ECTS : 3

The impact of Big Data and Artificial Intelligence on Finance

ECTS : 3
