Ingénieur

Economie

Economie

Responsable de la formation:

- Pierre CAHUC
- Francis BLOCH

Langue du programme: Français

Objectifs:

Le Département d'Economie de l'Ecole Polytechnique propose des enseignements de troisième année dans le cadre de deux masters distincts entièrement en anglais :
Le Master 1 Economics and Public Policy, en coopération avec Sciences Po et l'ENSAE
Le Master 1 Quantitative Economics and Finance, en coopération avec le département de Mathématiques Appliquées et HEC

Compétences acquises:

Les deux masters proposent des programmes d'économie de colorations très différentes : le master EPP combine des enseignements d'économie, de droit et de sociologie pour l'analyse et évaluation des politiques publiques ; le master QEF met l'accent sur les techniques quantitatives de l'analyse économique et de la finance. Les élèves intéressés par l'économie de l'environnement et du développement durable sont invités à choisir la filière « Economie » du Master « Sciences pour les Défis de l'Environnement ».

Le master Economics and Public Policy est un programme multidisciplinaire, avec une dominante en économie, qui vise à fournir les outils et les compétences nécessaires pour évaluer les politiques publiques dans une large palette de situations. Le programme se concentre sur les outils analytiques et quantitatifs développés en économie pour construire et évaluer les politiques publiques, avec des cours en microéconomie, macroéconomie, économétrie et analyse des politiques publiques. Toutefois, l'enseignement proposera également une approche multidisciplinaire indispensable pour comprendre les politiques publiques, avec des cours en droit, science politique et management. De plus, le master s'ouvre vers des enseignements professionnels avec des ateliers d'étude de cas, des cours électifs dans différents domaines de l'intervention publique et le stage de recherche de troisième année.

Le master Quantitative Economics and Finance propose au premier semestre des cours de tronc commun dans les disciplines clé de l'économie: microéconomie, macroéconomie et économétrie. A ces cours s'ajoutent des cours de spécialisation pour les élèves qui souhaitent se destiner à l'économie (en théorie des jeux) et aux élèves qui souhaitent se destiner à la finance (en économie de l'incertain). Au second semestre, le programme se sépare en trois voies. Deux voies plus professionnalisantes (« Business Economics » et « Finance ») destinées aux étudiants désireux d'entrer dans la vie professionnelle à l'issue du M2, et une voie recherche (« Economics Research ») destinée aux étudiants envisageant des études doctorales en France ou à l'international.

La voie « Business Economics » ouvre sur une large palette de cours électifs en économie industrielle, économie de l'énergie et des matières premières, économie de la concurrence, économie de l'environnement, etc.
La voie « Finance » propose une analyse des marchés financiers et de la finance d'entreprise.
La voie « Economics Research » propose des enseignements approfondis des principaux outils de la théorie économique : théorie des contrats, microéconomie avancée, théorie de la décision, macroéconomie financière…

Les stages de recherche du troisième trimestre sont proposés en correspondance avec les voies d'enseignement choisies : les stages « Business Economics » ont le plus souvent lieu en entreprise, les stages « Finance» dans les banques et institutions financières, et les stages « Economics Research » dans des centres de recherche en économie (Universités, centres d'études et organisations internationales).

La deuxième année master 2 QEF n'existant pas à l'heure actuelle, une information sur les débouchés des trois voies du M1 QEF, notamment à l'international, est utile à ce stade.

Les étudiants de la voie « Business Economics » poursuivent souvent leur M1 par des programmes de master 2 du type « Economics and Engineering », « Economie de l'Environnement », « Economics and Management », et parfois « Economics and Public Policy ».
Ceux de la voie « Finance » poursuivent par des masters 2 de type « Financial Economics », ou parfois « Mathematical Finance ».
Ceux de la voie « Economics Research » poursuivent soit par le M2 « Analyse des Politiques Economiques » à Paris, soit directement par un PhD. Il est à noter que la voie « Economics Research » est plus favorable pour avoir des lettres de recommandations pour les programmes doctoraux aux Etats-Unis.

Formations de quatrième année :
En France :
Corps de l'Etat
Ecoles : ENSAE ParisTech, Mines ParisTech (économie industrielle), Ponts ParisTech (économie, gestion, finance), HEC
M2 cohabilités par l'X :
- Analyse et Politique Economiques (avec EHESS, HEC, Ponts ParisTech, ENS, ENSAE ParisTech)
- Economics and Public Policy (avec Sciences Po et l'ENSAE)
- Economie du développement durable de l'énergie et de l'environnement (avec Paris X, EHESS, Agro ParisTech, Mines ParisTech, INSTN, ENSPM, Ponts Paristech)
- Projet, innovation, conception (MIXT, avec HEC, Mines ParisTech, Paris Dauphine)
- Economics of Markets and Organizations (avec Toulouse 1, EHESS)
- Mathématiques de la Modélisation (parcours OMJE) et Probabilités et Finance (avec Paris 6)
Autres M2 en économie

A l'étranger :
Master (of Science/of Arts) in Economics, Finance, Public Administration, Technology and Management, International Affairs, Operations Research, Systems

Attention : dans la plupart des universités anglo-saxonnes, les départements d'économie ne proposent que des PhD, pas de masters.

Débouchés:

Métiers à forte composante économique dans les secteurs suivants :
Banque, finance, assurance
Administration économique
Conseil en économie et stratégie
Organismes internationaux
Recherche en économie et finance
Agences de régulation
Grandes entreprises publiques et privées

2 thématiques
- Economics and Public Policy
- Quantitative economics and finance

Ingénieur

Economics and Public Policy

Economie - Spécialité: Economics and Public Policy

Responsable de la formation:

- Pierre CAHUC

Ecoles de ParisTech partenaires et responsables dans ces écoles:

- **École Nationale de la Statistique et de l'Administration Économique,** Elise COUDIN

Langue du programme: Anglais

Objectifs:

Le Master Economics and Public Policy (EPP) est destiné aux élèves se dirigeant vers des métiers ayant une composante économique significative dans un cadre privé ou public, national ou international (banques, assurances, conseil, grande entreprise, administration économique, recherche, etc.).

La première année du Master Economics and Public Policy est plus particulièrement destinée aux étudiants intéressés par la mise en œuvre et l'évaluation de l'action publique dans le domaine économique. Elle est indiquée pour les étudiants qui souhaitent poursuivre dans la seconde année de ce Master. Les étudiants titulaires de ce Master peuvent s'orienter vers la recherche ou vers des carrières dans l'administration et dans des organisations internationales.

Débouchés:

Le premier trimestre du Programme d'Approfondissement permet de consolider les acquis et d'explorer de nouveaux champs dans des matières fondamentales : microéconomie, macroéconomie et économétrie. Le deuxième trimestre permet aux élèves de s'orienter vers des domaines de spécialisation qu'ils approfondiront soit dans leur 2e année de Master, soit dans une école d'application, notamment l'ENSAE ParisTech. Durant le troisième trimestre, les étudiants effectuent un stage de recherche dans une entreprise, une administration ou un département de recherche d'une université, en France ou à l'étranger.

Formations conseillées en quatrième année du cycle polytechnicien :
Ce Programme d'Approfondissement conduit à la deuxième année du master EPP et du master APE cohabilité par l'École polytechnique.
Ce Programme d'Approfondissement permet en outre de suivre une quatrième année dans une école d'ingénieur ou une université technique partenaire, notamment l'ENSAE ParisTech, l'Ecole des Ponts ParisTech et Mines ParisTech.

Règles de choix :
Pour la 3A du cycle ingénieur, vous devez valider 4 modules scientifiques par période (3 cours, 1EA)
Pour être admis en M2, vous devez valider 5 modules scientifiques par période (3 cours, 1EA + 1cours supplémentaire)

Première période P1 : 3 cours obligatoires + 2 cours au choix
3 modules obligatoires : ECO552A (X) / ECO552B (ScPo) - ECO553 - ECO554
2 modules parmi : ECO571A - ECO571B - ECO572

Deuxième période P2 : 3 cours obligatoires + 2 cours au choix
2 modules obligatoires : ECO561 - ECO562
1 module au choix parmi : ECO563 - ECO568
2 modules au choix parmi : ECO565 - ECO566 - ECO581A - ECO581B - ECO582 - ECO584

Site de choix en ligne :
Le 4e module doit être pris comme un EA (validation du Cycle Ingénieur), et le 5e module doit être pris comme un cours supplémentaire (module pour être admis en M2).

Remarque sur les cours enseignés à Sciences Po :
Les cours enseignés à Sciences Po (ECO561 - ECO571A - ECO571B - ECO581A - ECO581B) ne sont ouverts qu'aux élèves polytechniciens inscrits au M1 EPP dans sa totalité.
Le cours ECO552B enseigné à Sciences Po n'est ouvert qu'aux étudiants de Sciences Po

Troisième trimestre :
Stage dans des administrations publiques, des cabinets de conseil, des centres de recherche (CREST, CECO, IFS, OFCE…).

Composition du programme :

Le programme 3A du Cycle Ingénieur comporte 4 modules scientifiques (3 cours et 1 EA) à valider par période (1 et 2).

- Master 1 Economics and Public Policy (EPP) - Cycle Ingénieur

Le programme pour une admission en M2 EPP comporte 5 modules scientifiques (3 cours, 1 cours supplémentaire et 1 EA) par période (1 et 2).

- Master 1 Economics and Public Policy (EPP)

Le stage de recherche

- Stage de recherche

Dernière mise à jour: jeu. 26 juillet 2012

Ingénieur

Master 1 Economics and Public Policy (EPP) - Cycle Ingénieur

Langue du programme: Français

Composition du programme :

Période 1 - Automne
3 cours obligatoires

- Econometrics : Intermediate Econometrics
- Economic Growth
- Microeconomics for Public Policy

1 enseignement d'approfondissement au choix

- Public Policy and the Law
- Political Sciences
- International Economics

Période 2 - Hiver

2 cours obligatoires

- Macroeconomics : business cycles
- Econometrics and Public Policy Evaluation

1 cours au choix

- Public Economics, Welfare, and Institutions
- Economics of Information

1 enseignement d'approfondissement au choix

- Industrial Organization
- Economic Policy
- Time Series / Panel Data
- Economics and Competition Policy
- Empirical Methods in Environmental Economics

Période 3 - Printemps

Stage de recherche

- Economie d'entreprise et Microéconomie
- Economie internationale et politique économique
- Banque, finance

Dernière mise à jour: jeu. 26 juillet 2012

ECO552A Econometrics : Intermediate Econometrics

This course sets out to introduce students to the main econometrical methods used for that purpose (linear regression, instrumental variables, simultaneous equations, panel data, dichotomous variables and audits and evaluation methods). Concrete examples (estimates of production functions, wage equations, money demand and assessment of employment policies) feature prominently on the course.

Economics is a discipline that, without being an experimental science, has been built up on observation of the facts and tests the accuracy of its theoretical concepts against empirical facts. Indeed, the ability to process large data sets into meaningful statistics is a much sought-after skill in the professions with a significant economic, para-economic or financial component.

Syllabus:

1. The linear regression model (Ordinary least squares)
2. Hypothesis testing in the linear regression model; generalized least squares
3. Endogeneity: definition and examples

4. Instrumental variables
5. The panel linear model with fixed effects
6. Qualitative models: logit and probit models
7. Other qualitative models: ordered probit , multinomial logit, etc.
8. Tobit model: the selection bias
9. Evaluation methods

References:
- Angrist J. et Pischke J.-S., 2008, Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.
- Cameron A. C. et Trivedi P., 2005, Microeconometrics: Methods And Applications. Cambridge University Press
- Greene W. H., 2008, Econometric Analysis. Pearson Education, 6th International Edition.
- Wooldridge J. M., 2008, Introductory Econometrics. South-Western, Div of Thomson Learning.

Course taught in English

Responsable : Francis Kramarz, Michaël Visser, Roux Sébastien
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 19 novembre 2012

ECO553 Economic Growth

This course is devoted to the analysis of growth and cycles. The first part presents stylized facts about economic growth in the long term in a historical and an international perspective. Then theoretical and empirical approaches are used to shed light on the industrial revolution of the eighteen and the nineteen centuries and on the economic growth of modern economies. The second part analyzes cycles with applications to monetary policy and international economics.

Syllabus:
The source of economic growth
Saving, accumulation of capital and growth
Technological progress and creative destruction
Growth and unemployment
Cycle : stylized facts
Keynesian cycles and Lucas' critic
Real cycles and optimal fluctuations
International cycles
Cycles and monetary policy

References:
-Aghion, P. and Howitt, P. (1998), Endogenous Growth Theory, MIT Press.
-Barro, R. and Sala-I-Martin, X. (2003), Economic Growth, McGraw-Hill Advanced Series in Economics.
-T. Cooley and E. Prescott , Chapter 1, Frontiers of Business Cycle Research, Princeton University Press
-Hairault, J.O. 1995, Les Fluctuations conjoncturelles, Economica
-R. King and S. Rebelo , (2000), Resuscitating Real Business Cycles, Handbook of Macroeconomics.

Course taught in English

Responsable : Pierre Cahuc, Jean-Olivier Hairault
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 07 décembre 2012

ECO554 Microeconomics for Public Policy

This course proposes an introduction to the tools and methods of advanced microeconomic theory used in the design and evaluation of public policies. This course is targeted towards students who wish to acquire the basic analytical tools to analyze public policies, choose among different policy options, and evaluate the effect of public policies. It builds on traditional microeconomic analysis, and extends it into three directions: the measure of the effects of public policies, welfare economics and mechanism and market design. The course will be divided between lectures and exercices and case studies.

Course outline:
Measure of the effects of public policies
- Advanced demand theory
- Compensation and surplus
- Contingent evaluation
Welfare Economics
- Preference aggregation
- Welfare measures
- Equality and efficiency measures
Informational asymmetries and mechanism design
- Mecanism design theory
- Clarke-Groves-Vickers mechanisms for the provision of public goods
- Market design

References:
-A. Mas-Colell, J. Green et M. Whinston Microeconomic Theory, Oxford University Press, 1995.
-A. Feldman R. Serrano Welfare Economics and Social Choice Theory, Springer 2005.
-J.J. Laffont, D. Martimort The Theory of Incentives: The Principal Agent Model, Princeton University Press, 2001.

Course taught in English

Responsable : Francis Bloch, Yukio Koriyama
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 12 juillet 2012

ECO571A Public Policy and the Law

This course is designed to introduce students to institutions, categories and methods of reasoning, in some of the great legal traditions. It will approach the legal phenomenon primarily from a public policy perspective, exploring the diversity of interactions between public policy and the law. It will first consider law as a framework and constraint for reforms, dwelling in particular on major contemporary issues in constitutional law and fundamental rights. The course will then reverse its perspective and introduce to law as a tool for policy makers, by tackling issues such for example as regulation, codification, contract or evaluation.
This course of an introductory nature is recommended only to students who have not been acquainted with law at licence level

It will focus, inter alia, on the insights of the « legal origins theory » which inspires the classifications of the world's legal systems as established by the World Bank, providing students with the means to construct a comparative critique. From there, it will use this perspective to look at various contemporary legal debates, ranging from the function of adjudication, to the codification issue within the European Union, or again the legal governance of the global economy.

Suggested reading:
Djankov, La Porta, Lopez de Silanes, Schleifer, Schleifer, "The Economic Consequences of Legal Origins", (excerpts Working Paper, World Bank, 13608 , 2007),
A. Schlieffer, "Understanding Regulation", 11 European Fin. Management 439 (2005)
P. Legrand, "European Legal Systems Are Not Converging » 1 I.C.L.Q. 52, 1996
G. Teubner, "Legal irritants", 61 Mod. L R 11, 1998
Alain Supiot, Homo Juridicus, On the Anthropoligal Function of the Law, Verso, 2007

Course taught in English at Science Po

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 21 octobre 2011

ECO571B Political Sciences

Not for the academic year 2012/2013

This course covers major contemporary topics of "quantitative sociology", a branch of sociology where testing theories is a central issue.
The main goal of this course is to present key contemporary academic research projects based on new theories derived from important sociological traditions, comparative data and innovative statistical models.

This course offers an overview of key issues and contemporary developments in comparative politics. Designed for students in economy, it provides the conceptual and theoretical background and the methodological skills for the study of politics in different institutional and cultural settings. One key question is the extent to which institutions shape politics and policies, and hence economic and social outcomes. Doing so, we review central issues such as democracy, governance, and collective action, especially in the context of globalisation. This course also provides an introduction to the behavioral foundations of

contemporary politics, looking at models of party competition, theories of voting behavior, lobbying.
This course is structured into 12 weekly lectures of 2 hours followed by 2 hours of applied works on the topic in small groups (“conférences”). They consist in a series of key readings for the discipline, oral presentations of case studies, and replication of results of the literature on Stata.
There will be a final exam for the lectures. Additional assignments will be given in “conférences”. The final exam represents 40 per cent of the final grade.

Course outline:

1. Introduction: political science and politics.
2. Comparison: research designs, sources, and methodological issues.
3. Rationality, institutions, and culture.
4. The modern state.
5. Autocracy and democracy.
6. Democratic institutions.
7. Government and governance.
8. Regime and institutional change.
9. Elections and electoral systems.
10. Social cleavages, political parties, and party systems.
11. Political participation.
12. Lobbying and state-society relations.

Main textbooks:
 Caramani, D. (ed.) 2011. Comparative Politics, Oxford University Press.
 Clark, W.R., M. Golder, S. Nadenichek Golder, 2009, Principles of Comparative Politics, CQ Press.
 Oxford handbooks in political science series, and especially Oxford Handbook of Comparative Politics, Oxford Handbook of Political Institutions, Oxford Handbook of Political Economy, Oxford Handbook of Public Policy, Oxford Handbook of Political Behavior, Oxford Handbook of Political Methodology.

Additional references will be provided through shared Zotero libraries and an Internet portal.

Course taught in English at Sciences Po

Modalités d'évaluation
The final grade will be based on STATA homework and on a final paper.

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 20 septembre 2012

ECO572 International Economics

L'objectif de ce cours est de fournir aux étudiants un ensemble d'outils d'analyse du commerce et de la macroéconomie internationale. Bien que les modèles fondamentaux soient enseignés en détail, l'accent est mis sur la manière de les utiliser et d'interpréter les résultats. Une attention toute particulière est donnée à l'analyse empirique et à la manière dont les modèles reproduisent les données.

L'organisation du cours est la suivante. Chaque thème comment avec l'analyse d'un certain nombre de faits stylisés. Nous étudions ensuite un ou deux modèles fondamentaux permettant de formaliser et d'expliquer ces évidences empiriques. La petite classe présente soit une extension des modèles étudiés en cours, soit un test empirique de ces modèles.

Cours enseigné en anglais

Introduction. La mondialisation en chiffres
1. L'avantage comparatif
2. Le modèle néo-classique de commerce international
3. Commerce international en concurrence imparfaite
4. La politique commerciale
5. Firmes multinationales et investissement direct à l'étranger
6. Optimisation intertemporelle et balance des paiements
7. Le taux de change
8. La dynamique du taux de change
9. Les crises de change

Niveau requis
Microéconomie 1 (Eco 431): Comportement de la firme en concurrence parfaite et imparfaite, optimisation.

Modalités d'évaluation
Un examen final composé de deux exercices (un en commerce et un en macroéconomie internationale). La note finale tient compte de la participation en petite classe.

Responsable : Isabelle Méjean
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 22 novembre 2011

ECO561 Macroeconomics : business cycles

This course is an introduction to modern macroeconomics. Students are initially equipped with the necessary tools to solve dynamic problems in economics. These techniques are then applied to address a number of important issues in macroeconomics, including the analysis of the business cycle. All these issues are investigated within a common framework which emphasizes the importance of microfoundations, rational expectations and general equilibrium.
By the end of the course, students should have a reasonable knowledge of the current state of macroeconomics, they should be able to read a large share of the recent academic literature in the field and they should be able to address many macroeconomic policy questions.

1. IS-LM, AS-AD, The Phillips Curve
2. Methods: Detrending and Dynamic Programming
3. Monetary Economics & Policy
4. The Ramsey model
5. Real Business Cycle Theory

6. The New Keynesian Framework
7. Asset Pricing
8. Search Models of the Labor Market
9. Heterogeneity in Macroeconomics

Course taught in English

Responsable : Jean-Baptiste Michau
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 11 avril 2013

ECO562 Econometrics and Public Policy Evaluation

The objective of the course is to introduce students to some of the most fundamental micro-econometric techniques. Although most of the models/ techniques covered in class have been developped independently from the Evaluation literature, they may all be used in conjunction with an objective to evaluate some public policies. The course will emphasize both theory (modeling), and applications. At the end of the course, the student should have accumulated a sufficiently large technical background in order to understand the most part of the micro-econometric policy evaluation literature. However, more structural approaches (based on explicit utility maximization) will not be covered in class, because of time constraints. In practice, there will be 7 sections discussed in class.

The following topics will be covered :
Introduction to Estimation: The Method of Maximum Likelihood
Binary and Multinomial Discrete Choice Models
Censored/Truncated Regressions, and Sample Selection Models
Linear Panel Data Models
Treatment Effect Models
Static and Dynamic Discrete Choice Panel Data Models
Duration Data Analysis

References:
- Wooldridge, Econometric Analysis of Cross Section and Panel Data, MIT Press, Cambridge, MA., 2002.
- Greene, Econometric Analysis, Prentice Hall, 6th Ed., Pearson-Prentice Hall., 2008.
- Cameron, Trivedi, Mircroeconometrics : Methods and Applications, Cambridge University Press, New York, 2005.

Course taught in English

Responsable : Christian Belzil, Mathias ANDRE
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 13 mars 2012

ECO563 Public Economics, Welfare, and Institutions

Description:
The course is an introduction, as complete as possible, to the various aspects of modern Public Economics: welfare economics, externalities and public choice theory, political economy. It first recalls the classical theory of market failures due to externalities and public goods. This part is illustrated by interventions from practionnioners about the regulation of transports, of telecomunications, and of the environment. The course also studies the Economics approaches to welfare and justice, from the empirical and the analytical points of view. It then turns to economic theories of Politics and institutions.
The course is tought in English.

List of topics:
1. Theory of public goods and externalities.
2. Management of public monopolies and regulation.
3. Environmental regulation.
4. Income taxation and redistribution.
5. Empirics on welfare and justice: opinions, experiments.
6. Economic theories of welfare and justice: Bentham and Arrow
7. Equity in practice: Inequality measurement, no-envy.
8. Intergenerational concerns.
9. Economic theory of democracy.

Main references:
A. Mas-Colell, M. Whiston and J. Green, Microeconomic Theory. Oxford University Press;
B. Salanié, The Economics of Market Failures, MIT Press.
M. Fleurbaey, Théories économique de la justice. Economica;
H. Moulin, Cooperative Microeconomics: A Game-theoretic Introduction. Princeton University Press

Course taught in English

Responsable : Jean-François Laslier, Yukio Koriyama
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : dimanche 20 janvier 2013

ECO568 Economics of Information

This course has a strong methodological component. It aims at covering basic materials in the domain of information economics. It provides an introduction to informational problems in economic analysis. It develops basic models of trading under asymmetric information and sketches the main lines of the general approach in terms of mechanism design. The interests of such models will be illustrated through a number of applications: auctions, insurance markets, compensation policies, organizational design, optimal regulation...

The course will build on a reminder of basic game theory applied to economics and on the introduction of uncertainty and information in decision making. It will then address the issue of competitive equilibrium

under imperfect information and under asymmetric information. This will lead to a presentation of the so-called Principal-Agent model that is central to the analysis of informational asymmetries, in both its moral hazard and its screening versions. General Bayesian settings will be presented with the basic implementation theory and the mechanism design literature. Applications will be provided dealing with public economics issues, auctions,… The concept of perfect Bayesian equilibrium will be used to analyze dynamic considerations in contractual relationships, signalling issues and models of information transmission.

The course consists in 9 main lectures (1:30 each) followed by two-hour exercise classes in which exercises will be proposed so as to get familiar with the techniques involved.

Course outline :
1.Prolog: Akerlof and Spence
a) The Market for Lemons;
b) Job Market Signaling
Exercices

2.Screening under Adverse Selection I
Equilibrium à la Rothschild-Stiglitz
Exercices

3.Screening under Adverse Selection II
Some Optimal Regulation Theory; Baron and Myerson's Model
Exercices

4.Introduction to Principal-Agent Theory under Moral Hazard
Grossman and Hart's model
Exercices

5.Games with Incomplete Information I
Harsanyi's Bayesian Equilibrium
Exercices

6.Introduction to the Theory of Auctions
First-price sealed-bid auction. English auction and Vickrey auction. Revenue equivalence.
Exercices

7.Games with Incomplete Information II
Perfect Bayesian Equilibrium
Exercices

8.Revelation of Preferences for Public Goods
Clarke-Groves Mechanisms
Exercices

References
-David Kreps (1990), A Course in Microeconomic Theory, Harvester Wheatsheaf, pub.

-Andreu Mas-Colell, Michael Whinston and Jerry Green, (1996), Microeconomic Theory, Oxford University Press.

-Martin Osborne and Ariel Rubinstein (1994), A Course in Game Theory, MIT Press.

-Robert Gibbons (1992), A Primer in Game Theory, Harvester-Wheatsheaf.

-Bernard Salanié (2005), The Economics of Contracts : A Primer, MIT Press.

Responsable : Robert Gary-Bobo
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 05 novembre 2012

ECO566 Industrial Organization

L'exercice du pouvoir de monopole : tarification, biens durables et discrimination. Interaction stratégique : concurrence en prix, quantités, capacités ; segmentation du marché et positionnement stratégique. Collusion tacite, investissement et d'innovation, barrières à l'entrée stratégiques.

Cours dispensé en anglais

Responsable : Patrick Rey
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 18 janvier 2013

ECO581A Economic Policy

This course illustrates how economic theory can shed light on public decision-making and provide a structured approach to some of today's key economic policy discussions, with a focus on France and the European Union.

The reference textbook by Agnès Bénassy-Quéré, Benoît Coeuré, Pierre Jacquet and Jean Pisani-Ferry was published in French by Editions De Boeck under the title Politique économique (revised edition, April 2009, available at Ecole polytechnique and Sciences Po libraries) and in English by Oxford University Press in August 2010.

The course is organized as a seminar and relies heavily on student participation. It is divided into nine four-hour lessons (see the attached syllabus). Each of them, except the introductory one for practical reasons, focuses on a particular policy domain and is divided into three parts: 1) an introductory lecture delivered by the teacher(s) on the topic of the lesson, 2) a reading by a group of students of a landmark theoretical or empirical paper which may be recent or older but pervasively relevant, and 3) a presentation by a group of students on a current policy issue, put in perspective against its theoretical background.

The rules of the game are the following. There will be groups of three or four, depending on the total

number of students. Each group will present a theoretical paper and a policy issue during two different classes. In both cases, the oral presentation should last around 30' and be based on a PowerPoint or equivalent handout. It is recommended that each group provides the necessary number of copies for other students and teachers to take away. All students are expected to participate in the discussions following the presentations and will be assessed accordingly.

Article presentations. The teachers can provide the articles in case they are not easily available at the library. In their presentation, students are incited to:
- introduce the article's background and rationale: new explanation of already known economic facts, theoretical controversy, access to new empirical data…
- explain the author's goal and methodology: modeling strategy, main assumptions, outline of the demonstration;
- put the article in perspective and discuss with a critical mind the significance and originality of the results achieved, the realism of the assumptions, parcimoniousness of the modeling technique, etc.

Policy presentations will by definition be more rooted in empirical and institutional facts, but they should nevertheless be problematic and explicitly rely on theoretical arguments: students may explain how economic theory and empirical studies have helped shape the policy discussion, or refer to theory to express their own judgment, or both.
On each proposed topic, students will receive in advance a brief reading list with suggested empirical sources and references. But this will only be an indication and students are incited to make their own search. Particular attention should be given to the data used in tables and figures: students are strongly encouraged to produce their own figures rather than cut-and-paste them from the Internet; accordingly, they should be able to trace sources and explain the nature and limits of the data.

There will be no final exam. Students will be assessed against their article and policy presentations. The mark will value the thoroughness and accuracy of the handout as well as the conciseness and clarity of the in-class presentation. Proper use of the students' theoretical knowledge will be particularly valued. Marks will be adjusted depending on participation in classes.

Tentative Programme:
1. Concepts and limits of economic policy
2. Fiscal policy
3. Monetary policy
4. International financial integration and exchange-rate policy
5. Tax policy
6. Growth policies
7. Labour market policies
8. Financial stability
9. Environment policies

Course taught in English

Responsable : Benoît Coeuré
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

ECO581B Time Series / Panel Data

This course considers econometric inference from time-series data. A crude outline is as follows. We discuss univariate and multivariate linear processes (ARMA, VAR), markov-switching models, and statistical concepts such as stationarity, ergodicity, and feedback. These tools are used to extend the applicability of least-squares and maximum-likelihood estimation to deal with dependent data in systems of equations. We also consider such topics as forecasting, seasonality, autoregressive conditional heteroskedasticity, spectral analysis, and the Kalman filter. Finally, we look at non-stationary time series (ARIMA) and derive statistical tests for unit roots and cointegration.

Lectures :
The main reference text for the course is Time Series Analysis by J.D. Hamilton (1994, Princeton UP).

Slides, class notes, and additional material will be made available.

Lectures complémentaires

A useful complement is Econometrics by F. Hayashi (2000, Princeton UP).

Some other texts that contain treatments of the material covered are (i) Applied Econometric Time Series by W. Enders (2009, John Wiley & Sons); and (ii) Time Series: Theory and Methods by P.J. Brockwell and R.A. Davis (2009, Springer).

Discussion that are more specialized to the econometrics of financial time series can be found in (i) Analysis of Financial Time Series by R.S. Tsay (2010, Wiley-Blackwell); and (ii) The Econometrics of Financial Markets by J.Y. Campbell, A.W. Loo, and A.C. MacKinlay (1996, Princeton UP).

A technical monograph on the estimation of linear processes is Asymptotic Theory for Econometricians by H. White (2000, Academic Press).

Course taught in English at Sciences Po

Niveau requis
Introduction to statistics and econometics at the graduate level. Experience with statistical software.

Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 25 septembre 2012

ECO582 Economics and Competition Policy

Le cours a une orientation d'économie appliquée : chaque séance présente les modèles économiques pertinents et une analyse de cas marquants dans les diverses jurisprudences (USA, Europe, France).

Les principaux thèmes abordés sont : notion de marché pertinent, pouvoir de marché et ententes, contrôle des concentrations, abus de position dominante (prix prédateurs), restrictions verticales, droit de la concurrence et régulation.

Cours dispensé en Anglais

Responsable : Verge Thibaud, David Sevy, Philippe Choné
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 18 décembre 2012

ECO584 Empirical Methods in Environmental Economics

INTRODUCTION: While economic theory is pertinent to intuitively grasping the underlying dynamics of the relationship between economic systems and the environment, it is the empirical verification of these tools that will provide policy makers with more concrete parameters with which to formulate their policies. This course will provide an overview of the empirical methods commonly used in the field of environmental economics to evaluate valuation of the environment, to deal with the shortcomings of available data, and to accurately measure relationships and identify their causal nature.

OBJECTIVE: To provide the students with a general overview of the most common methods used in empirical environmental economics. While the theoretical foundations of these methods will be outlined, a strong emphasis will be placed on providing practical implementation through examples and exercises.

SUBJECTS TO BE COVERED:

I - Contingent Valuation:
• Measurement of Willingness to Pay
• Measurement of Willingness to Accept
II –Regression Analysis:
• Least Squares Estimation
• Instrumental Variables Estimation
• Quasi-Experimental Methods
III - Experimental Methods
• Field Experiments
• Laboratory Experiments

Textbooks:
I. Bateman and K. Wills (2001). Valuing Environmental Preferences. Oxford University Press.
J. Angrist and J. Pischke (2008). Mostly Harmless Econometrics. Princeton University Press.
T. Cherry, S. Kroll, J.F. Shogren (2008). Experimental Methods in Environmental Economics. Oxford: Routledge.

Responsable : Eric Strobl
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4

Dernière mise à jour : vendredi 17 février 2012

ECO591 Economie d'entreprise et Microéconomie

L'objectif de cette option est de permettre aux élèves de mettre en oeuvre les connaissances formelles acquises à l'Ecole dans le cadre d'une démarche expérimentale personnelle et autonome au sein d'une entreprise.

Le Département d'Economie a des relations suivies avec un certain nombre d'entreprises avec lesquelles il est possible de monter des stages sur des thèmes tels que (liste indicatives) :
l'analyse concurrentielle d'un secteur d'activités ;
la performance financière d'un portefeuille d'actifs en fonction de différents critères liés à la responsabilité sociale des entreprises ;
l'efficacité de certains aspects des politiques de régulation ou des politiques antitrust (fusions, concentrations, relations verticales, position dominante...) ;
l'impact de certaines politiques publiques en matière de compétitivité industrielle (par exemple les politiques liées au changement climatique) ;
l'étude de la performance économique et financière d'un projet d'investissement ou d'une activité ;
le pilotage d'un projet de recherche développement au sein d'une entreprise et/ou avec des partenaires externes ;
l'optimisation d'une "supply chain" dans un système de production distribution ;
la prise en compte d'enjeux associés aux gouvernements d'entreprise (création de valeur, responsabilité environnementale et sociale...) dans les indicateurs de gestion et les tableaux de bord en vue de leur utilisation dans le cycle de gestion.
L'évaluation de politiques de gestion d'actifs, notamment dans le cadre d'une politique d'investissement socialement responsable.

Liste des entreprises donnée à titre indicatif :
-Entreprises industrielles : DuPont, EDF, Electrabel, Lafarge, La Poste, Saint-Gobain, GDF-Suez, Unilever...
-Sociétés de conseil : Estin & Co, LECG, Frontier Economics, CERA, Microeconomix...
-Banques, sociétés d'investissement, gérants de fonds : Axa, AGF, BNP-Paribas, Crédit Agricole, Dexia, CDC, Fonds de réserve des Retraites...
-Centres de recherche : Département d'économie, CIRED, CREST,HEC, CIRANO.

Responsable : Marie-Laure Allain
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011

ECO592 Economie internationale et politique économique

Les options portant sur la macroéconomie et la politique économique proposent des études qui concernent les principaux domaines de l'analyse macroéconomique (par exemple la détermination du change, la nature du chômage...) ou certains problèmes contemporains auxquels sont confrontées les politiques

économiques nationales (par exemple monnaie unique, unification allemande, ajustements au sein d'une union monétaire...) ou enfin des problèmes d'économie internationale : stratégies de développement, choix du régime de change, spécialisation internationale...

Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : jeudi 13 septembre 2012

ECO593 Banque, finance

Les domaines de recherche des options se déroulant dans des banques ou dans des organismes d'études économiques et financières s'apparentent à ceux de la microéconomie.Ils s'intègrent dans les travaux d'analyse et de développement d'outils aux implications souvent concrètes et immédiates .

Ils doivent impérativement être en lien avec les domaines d'enseignement du département d'économie et ne pas se contenter d'utiliser les méthodes des mathématiques appliquées sans un minimum de réflexion économique. Les sujets de stage sont potentiellement très variés :

- Valorisation d'une société dans le cadre d'un projet de fusion-acquisition
- Analyse de risque d'un marché ou d'un groupe de contreparties
- Analyse stratégique d'un marché ou d'un type de clientèle
- Lien entre variables macro-économiques et activités bancaires
- Analyse comportementale d'intervenants sur les marchés
- Etc.

Responsable : Antoine Frachot
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011

Master

Master 1 Economics and Public Policy (EPP)

Langue du programme: Français

Composition du programme :

Période 1 - Automne
3 cours obligatoires

Pour les élèves de l'Ecole polytechnique :

- Econometrics : Intermediate Econometrics

Pour les étudiants de Sciences Po :

- Econometrics : Statistics and Introductory Econometrics

- Economic Growth
- Microeconomics for Public Policy

2 cours au choix

- Public Policy and the Law
- Political Sciences
- International Economics

Période 2 - Hiver

2 cours obligatoires

- Macroeconomics : business cycles
- Econometrics and Public Policy Evaluation

1 cours au choix

- Public Economics, Welfare, and Institutions
- Economics of Information

2 cours au choix

- Economic Policy
- Time Series / Panel Data
- Economics and Competition Policy
- Empirical Methods in Environmental Economics

Période 3 - Printemps

Stage de recherche

- Economie d'entreprise et Microéconomie
- Economie internationale et politique économique
- Banque, finance

Dernière mise à jour: jeu. 26 juillet 2012

ECO552A Econometrics : Intermediate Econometrics

This course sets out to introduce students to the main econometrical methods used for that purpose (linear regression, instrumental variables, simultaneous equations, panel data, dichotomous variables and audits and evaluation methods). Concrete examples (estimates of production functions, wage equations, money demand and assessment of employment policies) feature prominently on the course.

Economics is a discipline that, without being an experimental science, has been built up on observation of the facts and tests the accuracy of its theoretical concepts against empirical facts. Indeed, the ability to process large data sets into meaningful statistics is a much sought-after skill in the professions with a significant economic, para-economic or financial component.

Syllabus:

1. The linear regression model (Ordinary least squares)
2. Hypothesis testing in the linear regression model; generalized least squares

3. Endogeneity: definition and examples
4. Instrumental variables
5. The panel linear model with fixed effects
6. Qualitative models: logit and probit models
7. Other qualitative models: ordered probit , multinomial logit, etc.
8. Tobit model: the selection bias
9. Evaluation methods

References:
- Angrist J. et Pischke J.-S., 2008, Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.
- Cameron A. C. et Trivedi P., 2005, Microeconometrics: Methods And Applications. Cambridge University Press
- Greene W. H., 2008, Econometric Analysis. Pearson Education, 6th International Edition.
- Wooldridge J. M., 2008, Introductory Econometrics. South-Western, Div of Thomson Learning.

Course taught in English

Responsable : Francis Kramarz, Michaël Visser, Roux Sébastien
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 19 novembre 2012

ECO552B Econometrics : Statistics and Introductory Econometrics

This course serves as an introduction to statistical inference and econometrics at the graduate level. First, basic concepts in probability theory (i.e., random variables, their distributions, and their moments) are reviewed. Next, we move to statistical inference. Methods for point and interval estimation (least-squares, maximum likelihood, and method of moments) are introduced and criteria for evaluating their performance (bias, efficiency, consistency, and various risk measures) are discussed. Procedures to perform hypothesis testing (t-test, F-test, Wald, Likelihood ratio, and Lagrange multiplier) are also developed. Finally, estimation and testing in the linear regression model is studied in detail.

Format pédagogique
Lectures complemented with problem sets.

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www.sciences-po.fr
Lectures demandées
The main reference text for the course is Statistical Inference by G.C. Casella and R.L. Berger (2008, Brooks/Cole).
Slides, class notes, and additional material will be made available.
Lectures complémentaires
It is useful to complement the main reference text with a book that devotes particular attention to estimation and inference in the linear regression model. All of the following econometric texts contain chapters on linear regression at the appropriate level: Estimation and Inference in Econometrics by R. Davidson and

J.G. MacKinnon (1994, Oxford UP), A Course in Econometrics by A.S. Goldberger (1991, Harvard UP), Econometrics by F. Hayashi (2000, Princeton UP), and An Introduction to Classical Econometric Theory by P.A. Ruud (2000, Oxford UP).
A technical compendium on the asymptotic theory behind least-squares estimation is Asymptotic Theory for Econometricians by H. White (2000, Academic Press).
Other statistical texts that provide treatments of probability theory and statistical inference at the level of the course are Basic Concepts of Probability and Statistics by J.L. Hodges Jr. and E. Lehmann (2004, SIAM) and Testing Statistical Hypotheses by E. Lehmann and J.P. Romano (2005, Springer).

Niveau requis
Familiarity with calculus, linear algebra, and elementary statistics and regression analysis is useful. Some experience with statistical software such as Stata is also helpful but not required.

Modalités d'évaluation
Grading is based on (i) a final exam at the end of term and (ii) problem sets during term.

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 12 mars 2012

ECO553 Economic Growth

This course is devoted to the analysis of growth and cycles. The first part presents stylized facts about economic growth in the long term in a historical and an international perspective. Then theoretical and empirical approaches are used to shed light on the industrial revolution of the eighteen and the nineteen centuries and on the economic growth of modern economies. The second part analyzes cycles with applications to monetary policy and international economics.

Syllabus:
The source of economic growth
Saving, accumulation of capital and growth
Technological progress and creative destruction
Growth and unemployment
Cycle : stylized facts
Keynesian cycles and Lucas' critic
Real cycles and optimal fluctuations
International cycles
Cycles and monetary policy

References:
-Aghion, P. and Howitt, P. (1998), Endogenous Growth Theory, MIT Press.
-Barro, R. and Sala-I-Martin, X. (2003), Economic Growth, McGraw-Hill Advanced Series in Economics.
-T. Cooley and E. Prescott , Chapter 1, Frontiers of Business Cycle Research, Princeton University Press
-Hairault, J.O. 1995, Les Fluctuations conjoncturelles, Economica
-R. King and S. Rebelo , (2000), Resuscitating Real Business Cycles, Handbook of Macroeconomics.

Course taught in English

Responsable : Pierre Cahuc, Jean-Olivier Hairault
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 07 décembre 2012

ECO554 Microeconomics for Public Policy

This course proposes an introduction to the tools and methods of advanced microeconomic theory used in the design and evaluation of public policies. This course is targeted towards students who wish to acquire the basic analytical tools to analyze public policies, choose among different policy options, and evaluate the effect of public policies. It builds on traditional microeconomic analysis, and extends it into three directions: the measure of the effects of public policies, welfare economics and mechanism and market design. The course will be divided between lectures and exercices and case studies.

Course outline:
Measure of the effects of public policies
- Advanced demand theory
- Compensation and surplus
- Contingent evaluation
Welfare Economics
- Preference aggregation
- Welfare measures
- Equality and efficiency measures
Informational asymmetries and mechanism design
- Mecanism design theory
- Clarke-Groves-Vickers mechanisms for the provision of public goods
- Market design

References:
-A. Mas-Colell, J. Green et M. Whinston Microeconomic Theory, Oxford University Press, 1995.
-A. Feldman R. Serrano Welfare Economics and Social Choice Theory, Springer 2005.
-J.J. Laffont, D. Martimort The Theory of Incentives: The Principal Agent Model, Princeton University Press, 2001.

Course taught in English

Responsable : Francis Bloch, Yukio Koriyama
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 12 juillet 2012

ECO571A Public Policy and the Law

This course is designed to introduce students to institutions, categories and methods of reasoning, in some of the great legal traditions. It will approach the legal phenomenon primarily from a public policy perspective, exploring the diversity of interactions between public policy and the law. It will first consider law as a framework and constraint for reforms, dwelling in particular on major contemporary issues in constitutional law and fundamental rights. The course will then reverse its perspective and introduce to law as a tool for policy makers, by tackling issues such for example as regulation, codification, contract or evaluation.
This course of an introductory nature is recommended only to students who have not been acquainted with law at licence level

It will focus, inter alia, on the insights of the « legal origins theory » which inspires the classifications of the world's legal systems as established by the World Bank, providing students with the means to construct a comparative critique. From there, it will use this perspective to look at various contemporary legal debates, ranging from the function of adjudication, to the codification issue within the European Union, or again the legal governance of the global economy.

Suggested reading:
Djankov, La Porta, Lopez de Silanes, Schleifer, Schleifer, "The Economic Consequences of Legal Origins", (excerpts Working Paper, World Bank, 13608 , 2007),
A. Schlieffer, "Understanding Regulation", 11 European Fin. Management 439 (2005)
P. Legrand, "European Legal Systems Are Not Converging » 1 I.C.L.Q. 52, 1996
G. Teubner, "Legal irritants", 61 Mod. L R 11, 1998
Alain Supiot, Homo Juridicus, On the Anthropoligal Function of the Law, Verso, 2007

Course taught in English at Science Po

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 21 octobre 2011

ECO571B Political Sciences

Not for the academic year 2012/2013

This course covers major contemporary topics of "quantitative sociology", a branch of sociology where testing theories is a central issue.
The main goal of this course is to present key contemporary academic research projects based on new theories derived from important sociological traditions, comparative data and innovative statistical models.

This course offers an overview of key issues and contemporary developments in comparative politics. Designed for students in economy, it provides the conceptual and theoretical background and the methodological skills for the study of politics in different institutional and cultural settings. One key question is the extent to which institutions shape politics and policies, and hence economic and social outcomes. Doing so, we review central issues such as democracy, governance, and collective action, especially in the context of globalisation. This course also provides an introduction to the behavioral foundations of contemporary politics, looking at models of party competition, theories of voting behavior, lobbying.
This course is structured into 12 weekly lectures of 2 hours followed by 2 hours of applied works on the

topic in small groups (“conférences”). They consist in a series of key readings for the discipline, oral presentations of case studies, and replication of results of the literature on Stata.
There will be a final exam for the lectures. Additional assignments will be given in “conférences”. The final exam represents 40 per cent of the final grade.

Course outline:

1. Introduction: political science and politics.
2. Comparison: research designs, sources, and methodological issues.
3. Rationality, institutions, and culture.
4. The modern state.
5. Autocracy and democracy.
6. Democratic institutions.
7. Government and governance.
8. Regime and institutional change.
9. Elections and electoral systems.
10. Social cleavages, political parties, and party systems.
11. Political participation.
12. Lobbying and state-society relations.

Main textbooks:
 Caramani, D. (ed.) 2011. Comparative Politics, Oxford University Press.
 Clark, W.R., M. Golder, S. Nadenichek Golder, 2009, Principles of Comparative Politics, CQ Press.
 Oxford handbooks in political science series, and especially Oxford Handbook of Comparative Politics, Oxford Handbook of Political Institutions, Oxford Handbook of Political Economy, Oxford Handbook of Public Policy, Oxford Handbook of Political Behavior, Oxford Handbook of Political Methodology.

Additional references will be provided through shared Zotero libraries and an Internet portal.

Course taught in English at Sciences Po

Modalités d'évaluation
The final grade will be based on STATA homework and on a final paper.

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 20 septembre 2012

ECO572 International Economics

L'objectif de ce cours est de fournir aux étudiants un ensemble d'outils d'analyse du commerce et de la macroéconomie internationale. Bien que les modèles fondamentaux soient enseignés en détail, l'accent est mis sur la manière de les utiliser et d'interpréter les résultats. Une attention toute particulière est donnée à l'analyse empirique et à la manière dont les modèles reproduisent les données.

L'organisation du cours est la suivante. Chaque thème comment avec l'analyse d'un certain nombre de faits

stylisés. Nous étudions ensuite un ou deux modèles fondamentaux permettant de formaliser et d'expliquer ces évidences empiriques. La petite classe présente soit une extension des modèles étudiés en cours, soit un test empirique de ces modèles.

Cours enseigné en anglais

Introduction. La mondialisation en chiffres
1. L'avantage comparatif
2. Le modèle néo-classique de commerce international
3. Commerce international en concurrence imparfaite
4. La politique commerciale
5. Firmes multinationales et investissement direct à l'étranger
6. Optimisation intertemporelle et balance des paiements
7. Le taux de change
8. La dynamique du taux de change
9. Les crises de change

Niveau requis
Microéconomie 1 (Eco 431): Comportement de la firme en concurrence parfaite et imparfaite, optimisation.

Modalités d'évaluation
Un examen final composé de deux exercices (un en commerce et un en macroéconomie internationale). La note finale tient compte de la participation en petite classe.

Responsable : Isabelle Méjean
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 22 novembre 2011

ECO561 Macroeconomics : business cycles

This course is an introduction to modern macroeconomics. Students are initially equipped with the necessary tools to solve dynamic problems in economics. These techniques are then applied to address a number of important issues in macroeconomics, including the analysis of the business cycle. All these issues are investigated within a common framework which emphasizes the importance of microfoundations, rational expectations and general equilibrium.
By the end of the course, students should have a reasonable knowledge of the current state of macroeconomics, they should be able to read a large share of the recent academic literature in the field and they should be able to address many macroeconomic policy questions.

1. IS-LM, AS-AD, The Phillips Curve
2. Methods: Detrending and Dynamic Programming
3. Monetary Economics & Policy
4. The Ramsey model
5. Real Business Cycle Theory
6. The New Keynesian Framework
7. Asset Pricing

8. Search Models of the Labor Market
9. Heterogeneity in Macroeconomics

Course taught in English

Responsable : Jean-Baptiste Michau
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 11 avril 2013

ECO562 Econometrics and Public Policy Evaluation

The objective of the course is to introduce students to some of the most fundamental micro-econometric techniques. Although most of the models/ techniques covered in class have been developped independently from the Evaluation literature, they may all be used in conjunction with an objective to evaluate some public policies. The course will emphasize both theory (modeling), and applications. At the end of the course, the student should have accumulated a sufficiently large technical background in order to understand the most part of the micro-econometric policy evaluation literature. However, more structural approaches (based on explicit utility maximization) will not be covered in class, because of time constraints. In practice, there will be 7 sections discussed in class.

The following topics will be covered :
Introduction to Estimation: The Method of Maximum Likelihood
Binary and Multinomial Discrete Choice Models
Censored/Truncated Regressions, and Sample Selection Models
Linear Panel Data Models
Treatment Effect Models
Static and Dynamic Discrete Choice Panel Data Models
Duration Data Analysis

References:
- Wooldridge, Econometric Analysis of Cross Section and Panel Data, MIT Press, Cambridge, MA., 2002.
- Greene, Econometric Analysis, Prentice Hall, 6th Ed., Pearson-Prentice Hall., 2008.
- Cameron, Trivedi, Mircroeconometrics : Methods and Applications, Cambridge University Press, New York, 2005.

Course taught in English

Responsable : Christian Belzil, Mathias ANDRE
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 13 mars 2012

ECO563 Public Economics, Welfare, and Institutions

Description:
The course is an introduction, as complete as possible, to the various aspects of modern Public Economics: welfare economics, externalities and public choice theory, political economy. It first recalls the classical theory of market failures due to externalities and public goods. This part is illustrated by interventions from practionnioners about the regulation of transports, of telecomunications, and of the environment. The course also studies the Economics approaches to welfare and justice, from the empirical and the analytical points of view. It then turns to economic theories of Politics and institutions.
The course is tought in English.

List of topics:
1. Theory of public goods and externalities.
2. Management of public monopolies and regulation.
3. Environmental regulation.
4. Income taxation and redistribution.
5. Empirics on welfare and justice: opinions, experiments.
6. Economic theories of welfare and justice: Bentham and Arrow
7. Equity in practice: Inequality measurement, no-envy.
8. Intergenerational concerns.
9. Economic theory of democracy.

Main references:
A. Mas-Colell, M. Whiston and J. Green, Microeconomic Theory. Oxford University Press;
B. Salanié, The Economics of Market Failures, MIT Press.
M. Fleurbaey, Théories économique de la justice. Economica;
H. Moulin, Cooperative Microeconomics: A Game-theoretic Introduction. Princeton University Press

Course taught in English

Responsable : Jean-François Laslier, Yukio Koriyama
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : dimanche 20 janvier 2013

ECO568 Economics of Information

This course has a strong methodological component. It aims at covering basic materials in the domain of information economics. It provides an introduction to informational problems in economic analysis. It develops basic models of trading under asymmetric information and sketches the main lines of the general approach in terms of mechanism design. The interests of such models will be illustrated through a number of applications: auctions, insurance markets, compensation policies, organizational design, optimal regulation...

The course will build on a reminder of basic game theory applied to economics and on the introduction of uncertainty and information in decision making. It will then address the issue of competitive equilibrium under imperfect information and under asymmetric information. This will lead to a presentation of the so-called Principal-Agent model that is central to the analysis of informational asymmetries, in both its

moral hazard and its screening versions. General Bayesian settings will be presented with the basic implementation theory and the mechanism design literature. Applications will be provided dealing with public economics issues, auctions,… The concept of perfect Bayesian equilibrium will be used to analyze dynamic considerations in contractual relationships, signalling issues and models of information transmission.

The course consists in 9 main lectures (1:30 each) followed by two-hour exercise classes in which exercises will be proposed so as to get familiar with the techniques involved.

Course outline :
1.Prolog: Akerlof and Spence
a) The Market for Lemons;
b) Job Market Signaling
Exercices

2.Screening under Adverse Selection I
Equilibrium à la Rothschild-Stiglitz
Exercices

3.Screening under Adverse Selection II
Some Optimal Regulation Theory; Baron and Myerson's Model
Exercices

4.Introduction to Principal-Agent Theory under Moral Hazard
Grossman and Hart's model
Exercices

5.Games with Incomplete Information I
Harsanyi's Bayesian Equilibrium
Exercices

6.Introduction to the Theory of Auctions
First-price sealed-bid auction. English auction and Vickrey auction. Revenue equivalence.
Exercices

7.Games with Incomplete Information II
Perfect Bayesian Equilibrium
Exercices

8.Revelation of Preferences for Public Goods
Clarke-Groves Mechanisms
Exercices

References
-David Kreps (1990), A Course in Microeconomic Theory, Harvester Wheatsheaf, pub.

-Andreu Mas-Colell, Michael Whinston and Jerry Green, (1996), Microeconomic Theory, Oxford University Press.

-Martin Osborne and Ariel Rubinstein (1994), A Course in Game Theory, MIT Press.

-Robert Gibbons (1992), A Primer in Game Theory, Harvester-Wheatsheaf.

-Bernard Salanié (2005), The Economics of Contracts : A Primer, MIT Press.

Responsable : Robert Gary-Bobo
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 05 novembre 2012

ECO581A Economic Policy

This course illustrates how economic theory can shed light on public decision-making and provide a structured approach to some of today's key economic policy discussions, with a focus on France and the European Union.

The reference textbook by Agnès Bénassy-Quéré, Benoît Coeuré, Pierre Jacquet and Jean Pisani-Ferry was published in French by Editions De Boeck under the title Politique économique (revised edition, April 2009, available at Ecole polytechnique and Sciences Po libraries) and in English by Oxford University Press in August 2010.

The course is organized as a seminar and relies heavily on student participation. It is divided into nine four-hour lessons (see the attached syllabus). Each of them, except the introductory one for practical reasons, focuses on a particular policy domain and is divided into three parts: 1) an introductory lecture delivered by the teacher(s) on the topic of the lesson, 2) a reading by a group of students of a landmark theoretical or empirical paper which may be recent or older but pervasively relevant, and 3) a presentation by a group of students on a current policy issue, put in perspective against its theoretical background.

The rules of the game are the following. There will be groups of three or four, depending on the total number of students. Each group will present a theoretical paper and a policy issue during two different classes. In both cases, the oral presentation should last around 30' and be based on a PowerPoint or equivalent handout. It is recommended that each group provides the necessary number of copies for other students and teachers to take away. All students are expected to participate in the discussions following the presentations and will be assessed accordingly.

Article presentations. The teachers can provide the articles in case they are not easily available at the library. In their presentation, students are incited to:
- introduce the article's background and rationale: new explanation of already known economic facts, theoretical controversy, access to new empirical data…
- explain the author's goal and methodology: modeling strategy, main assumptions, outline of the demonstration;
- put the article in perspective and discuss with a critical mind the significance and originality of the results achieved, the realism of the assumptions, parcimoniousness of the modeling technique, etc.

Policy presentations will by definition be more rooted in empirical and institutional facts, but they should nevertheless be problematic and explicitly rely on theoretical arguments: students may explain how economic theory and empirical studies have helped shape the policy discussion, or refer to theory to

express their own judgment, or both.
On each proposed topic, students will receive in advance a brief reading list with suggested empirical sources and references. But this will only be an indication and students are incited to make their own search. Particular attention should be given to the data used in tables and figures: students are strongly encouraged to produce their own figures rather than cut-and-paste them from the Internet; accordingly, they should be able to trace sources and explain the nature and limits of the data.

There will be no final exam. Students will be assessed against their article and policy presentations. The mark will value the thoroughness and accuracy of the handout as well as the conciseness and clarity of the in-class presentation. Proper use of the students' theoretical knowledge will be particularly valued. Marks will be adjusted depending on participation in classes.

Tentative Programme:
1. Concepts and limits of economic policy
2. Fiscal policy
3. Monetary policy
4. International financial integration and exchange-rate policy
5. Tax policy
6. Growth policies
7. Labour market policies
8. Financial stability
9. Environment policies

Course taught in English

Responsable : Benoît Coeuré
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

ECO581B Time Series / Panel Data

This course considers econometric inference from time-series data. A crude outline is as follows. We discuss univariate and multivariate linear processes (ARMA, VAR), markov-switching models, and statistical concepts such as stationarity, ergodicity, and feedback. These tools are used to extend the applicability of least-squares and maximum-likelihood estimation to deal with dependent data in systems of equations. We also consider such topics as forecasting, seasonality, autoregressive conditional heteroskedasticity, spectral analysis, and the Kalman filter. Finally, we look at non-stationary time series (ARIMA) and derive statistical tests for unit roots and cointegration.

Lectures :
The main reference text for the course is Time Series Analysis by J.D. Hamilton (1994, Princeton UP).

Slides, class notes, and additional material will be made available.

Lectures complémentaires

A useful complement is Econometrics by F. Hayashi (2000, Princeton UP).

Some other texts that contain treatments of the material covered are (i) Applied Econometric Time Series by W. Enders (2009, John Wiley & Sons); and (ii) Time Series: Theory and Methods by P.J. Brockwell and R.A. Davis (2009, Springer).

Discussion that are more specialized to the econometrics of financial time series can be found in (i) Analysis of Financial Time Series by R.S. Tsay (2010, Wiley-Blackwell); and (ii) The Econometrics of Financial Markets by J.Y. Campbell, A.W. Loo, and A.C. MacKinlay (1996, Princeton UP).

A technical monograph on the estimation of linear processes is Asymptotic Theory for Econometricians by H. White (2000, Academic Press).

Course taught in English at Sciences Po

Niveau requis
Introduction to statistics and econometics at the graduate level. Experience with statistical software.

Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 25 septembre 2012

ECO582 Economics and Competition Policy

Le cours a une orientation d'économie appliquée : chaque séance présente les modèles économiques pertinents et une analyse de cas marquants dans les diverses jurisprudences (USA, Europe, France).

Les principaux thèmes abordés sont : notion de marché pertinent, pouvoir de marché et ententes, contrôle des concentrations, abus de position dominante (prix prédateurs), restrictions verticales, droit de la concurrence et régulation.

Cours dispensé en Anglais

Responsable : Verge Thibaud, David Sevy, Philippe Choné
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 18 décembre 2012

ECO584 Empirical Methods in Environmental Economics

INTRODUCTION: While economic theory is pertinent to intuitively grasping the underlying dynamics of the relationship between economic systems and the environment, it is the empirical verification of these tools

that will provide policy makers with more concrete parameters with which to formulate their policies. This course will provide an overview of the empirical methods commonly used in the field of environmental economics to evaluate valuation of the environment, to deal with the shortcomings of available data, and to accurately measure relationships and identify their causal nature.

OBJECTIVE: To provide the students with a general overview of the most common methods used in empirical environmental economics. While the theoretical foundations of these methods will be outlined, a strong emphasis will be placed on providing practical implementation through examples and exercises.

SUBJECTS TO BE COVERED:

I - Contingent Valuation:
• Measurement of Willingness to Pay
• Measurement of Willingness to Accept
II –Regression Analysis:
• Least Squares Estimation
• Instrumental Variables Estimation
• Quasi-Experimental Methods
III - Experimental Methods
• Field Experiments
• Laboratory Experiments

Textbooks:
I. Bateman and K. Wills (2001). Valuing Environmental Preferences. Oxford University Press.
J. Angrist and J. Pischke (2008). Mostly Harmless Econometrics. Princeton University Press.
T. Cherry, S. Kroll, J.F. Shogren (2008). Experimental Methods in Environmental Economics. Oxford: Routledge.

Responsable : Eric Strobl
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 17 février 2012

ECO591 Economie d'entreprise et Microéconomie

L'objectif de cette option est de permettre aux élèves de mettre en oeuvre les connaissances formelles acquises à l'Ecole dans le cadre d'une démarche expérimentale personnelle et autonome au sein d'une entreprise.

Le Département d'Economie a des relations suivies avec un certain nombre d'entreprises avec lesquelles il est possible de monter des stages sur des thèmes tels que (liste indicatives) :
l'analyse concurrentielle d'un secteur d'activités ;
la performance financière d'un portefeuille d'actifs en fonction de différents critères liés à la responsabilité sociale des entreprises ;
l'efficacité de certains aspects des politiques de régulation ou des politiques antitrust (fusions, concentrations, relations verticales, position dominante...) ;
l'impact de certaines politiques publiques en matière de compétitivité industrielle (par exemple les politiques

liées au changement climatique) ;
l'étude de la performance économique et financière d'un projet d'investissement ou d'une activité ;
le pilotage d'un projet de recherche développement au sein d'une entreprise et/ou avec des partenaires externes ;
l'optimisation d'une "supply chain" dans un système de production distribution ;
la prise en compte d'enjeux associés aux gouvernements d'entreprise (création de valeur, responsabilité environnementale et sociale...) dans les indicateurs de gestion et les tableaux de bord en vue de leur utilisation dans le cycle de gestion.
L'évaluation de politiques de gestion d'actifs, notamment dans le cadre d'une politique d'investissement socialement responsable.

Liste des entreprises donnée à titre indicatif :
-Entreprises industrielles : DuPont, EDF, Electrabel, Lafarge, La Poste, Saint-Gobain, GDF-Suez, Unilever...
-Sociétés de conseil : Estin & Co, LECG, Frontier Economics, CERA, Microeconomix...
-Banques, sociétés d'investissement, gérants de fonds : Axa, AGF, BNP-Paribas, Crédit Agricole, Dexia, CDC, Fonds de réserve des Retraites...
-Centres de recherche : Département d'économie, CIRED, CREST,HEC, CIRANO.

Responsable : Marie-Laure Allain
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011

ECO592 Economie internationale et politique économique

Les options portant sur la macroéconomie et la politique économique proposent des études qui concernent les principaux domaines de l'analyse macroéconomique (par exemple la détermination du change, la nature du chômage...) ou certains problèmes contemporains auxquels sont confrontées les politiques économiques nationales (par exemple monnaie unique, unification allemande, ajustements au sein d'une union monétaire...) ou enfin des problèmes d'économie internationale : stratégies de développement, choix du régime de change, spécialisation internationale...

Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : jeudi 13 septembre 2012

ECO593 Banque, finance

Les domaines de recherche des options se déroulant dans des banques ou dans des organismes d'études économiques et financières s'apparentent à ceux de la microéconomie.Ils s'intègrent dans les travaux d'analyse et de développement d'outils aux implications souvent concrètes et immédiates .

Ils doivent impérativement être en lien avec les domaines d'enseignement du département d'économie et

ne pas se contenter d'utiliser les méthodes des mathématiques appliquées sans un minimum de réflexion économique. Les sujets de stage sont potentiellement très variés :

- Valorisation d'une société dans le cadre d'un projet de fusion-acquisition
- Analyse de risque d'un marché ou d'un groupe de contreparties
- Analyse stratégique d'un marché ou d'un type de clientèle
- Lien entre variables macro-économiques et activités bancaires
- Analyse comportementale d'intervenants sur les marchés
- Etc.

Responsable : Antoine Frachot
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011

ECO590 Stage de recherche

Les stages de recherche en économie proposent aux élèves ayant suivi les enseignements d'économie en troisième année des études dont le traitement les amène à appliquer et à approfondir des modèles économiques formalisés, des méthodes statistiques ou de simulation ou encore, sur des cas concrets, à appliquer les méthodes vues dans les enseignements.

Selon la préférence des élèves et la nature des sujets, l'accent est mis,
soit sur l'approfondissement théorique
soit sur les applications.
Dans un certain nombre de cas, il peut être demandé aux élèves d'avoir suivi certains cours du programme d'approfondissement d'Économie (notamment en ce qui concerne les stages en entreprise).

Les sujets proposés sont regroupés en 3 grandes catégories, en France et à l'étranger :
EE-MI : Économie de l'Entreprise et Microéconomie
EI&PE : Économie Internationale et Politique Economique
B-F : Banque-Finance

Les élèves sont le plus souvent groupés en binômes et les stages se déroulent en entreprise, dans les banques, les administrations économiques, les instituts d'études et de recherche, ou encore dans des universités étrangères.

DÉROULEMENT DU STAGE DE RECHERCHE
Choix du stage :
Le catalogue des stages de recherche en économie sera diffusé fin novembre par le secrétariat du Département d'Économie. Dès la parution du catalogue, le Département d'Économie centralisera les demandes et les répercutera sur les enseignants concernés.

Les demandes de stages seront à l'étude mi-décembre par les responsables de stages en coordination avec les divers partenaires en vue d'une finalisation éventuelle. La procédure d'attribution des stages se fera durant le mois de janvier (et si nécessaire, début février). Ce sont les enseignants responsables des

stages qui trancheront en cas de concurrence pour un même stage.

À l'issue de cette étude, le choix définitif du stage incombe au futur stagiaire en fonction des possibilités qui lui restent offertes.

Toute modification de demande, notamment un désengagement, devra impérativement être signalée au Département d'Économie.

Les propositions personnelles des élèves ne seront prises compte à la condition impérative qu'un enseignant du Département accepte de les encadrer. Ces propositions de stage doivent faire l'objet d'une description écrite (sujet détaillé et lieu de stage) déposée au Département.

Durée du stage :
Les stages débutent en avril et se déroulent sur une période de 12 semaines minimum à 5 mois.

Soutenances :
Il est rappelé que le travail en stage de recherche donne lieu à une séance de soutenance de 45 minutes environ devant un jury composé d'un professeur et de l'enseignant responsable du stage et, le cas échéant d'un représentant de l'école en co-tutelle. L'élève devra fournir un rapport à remettre à l'enseignant responsable (support papier). Une version devra être mise en ligne (la procédure sera indiquée par le bureau des stages de l'Ecole Polytechnique)

Responsable : Marie-Laure Allain, Antoine Frachot, Riboni Alessandro
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : vendredi 22 février 2013

Ingénieur

Quantitative economics and finance

Economie

Responsable de la formation:

- Francis BLOCH

Ecoles de ParisTech partenaires et responsables dans ces écoles:

- **Hautes Etudes Commerciales,** Laurent CALVET

Langue du programme: Anglais

Objectifs:

Le Master 1 Quantitative Economics and Finance (QEF) est un programme joint entre l'Ecole Polytechnique et HEC. Cette formation en économie et finance est organisée par le département d'Economie et le département de Mathématiques Appliquées de l'Ecole Polytechnique, ainsiq ue le département d'Economie et Science de la Décision et le département de Finance d'HEC.

Débouchés:

Le M1 QEF est destiné aux étudiants qui désirent orienter leur carrière en économie ou en finance en suivant en quatrième année un master 2 d'économie cohabilité par l'Ecole polytechnique (particulièrement APE, EMO, EDDEE), ou en effectuant leur quatrième année dans une école d'ingénieur, notamment l'ENSAE ParisTech, l'Ecole des Ponts ParisTech et Mines ParisTech, ou une université technique partenaire.

Le M1 offre les enseignements fondamentaux permettant aux étudiants de formation scientifique de s'orienter vers un M2 d'économie ou de finance. L'objectif du programme est double :
Permettre aux étudiants de maîtriser les concepts et les méthodes fondamentaux d'économie et de finance ;
Leur offrir la possibilité de développer des projets de recherche cohérents en première et deuxième année de master.

Contenu :
Le programme de M1 s'organise en trois périodes.
La première période permet de consolider les acquis et d'explorer de nouveaux champs dans des matières fondamentales : microéconomie, macroéconomie, théorie des jeux et économétrie.
La deuxième période permet aux élèves de s'orienter vers trois voies : Business Economics, Economics Research et Finance.
Durant la troisième période, les étudiants effectuent un stage de recherche dans une entreprise, une administration ou un département de recherche d'une université, en France ou à l'étranger.

Règles de choix :
Pour la 3A du cycle ingénieur, vous devez valider 4 modules scientifiques par période (3 cours, 1EA).
Pour être admis en M2, vous devez valider 5 modules scientifiques pour la période 1 (4 modules scientifiques + cours de remise à niveau) et 4 en période 2.
P1 : Vous ne pourrez pas a posteriori substituer le 5e module au 4e pour valider le cycle ingénieur.

Première période P1 : 3 cours obligatoires et un EA au choix (validation du cycle polytechnicien) + 1 cours de remise à niveau (admission en M2)
Cycle polytechnicien
3 modules obligatoires : ECO556 - ECO557 -ECO558
1 EA au choix : ECO573 ou ECO574, ECO 573 pour la voie Finance, ECO 574 est obligatoire pour suivre les voies Business Economics et Economics Research
1 cours de mise à niveau : ECO559 (X) ou MAP551 (HEC et Extérieurs)
(Site de choix en ligne : ce 5e module doit être pris comme un cours supplémentaire)

Deuxième période P2 : 4 cours
Les élèves de Polytechnique choisissent entre trois voies :
Business Economics
Economics Research
Finance

Les deux voies « Economics research » et « Finance » offrent une sélection de cours destinée aux étudiants qui envisagent de poursuivre leurs études par un M2 et une thèse. Il y a un nombre maximal d'étudiants admis dans ces deux voies et l'admission est sujette à l'approbation des directeurs du programme.

Les étudiants de HEC doivent choisir entre l'une des deux voies "Economics research" et « Finance».

Remarque sur les cours :
Tous les cours de QEF sont en anglais, excepté ECO564 et MAP568
Cours enseignés à HEC
Les cours enseignés à HEC (ECO585A - ECO585B - ECO588A - ECO588B - ECO588C) ne sont ouverts qu'aux élèves polytechniciens inscrits au M1 QEF dans sa totalité.

Période 3
Stage de recherche dans une entreprise, une administration ou un laboratoire de recherche (CREST, CECO, IFS,OFCE…).

1 cours de remise à niveau
Pour les élèves de l'X souhaitant poursuivre en Master 2 APE, EMO ou EDDEE
- Financial Markets

Pour les étudiants d'HEC ou les extérieurs
- Probability Theory for Financial Economics

3 cours obligatoires
- Microeconomics
- Econometrics
- Macroeconomics : business cycles

1 Enseignement d'Approfondissement au choix
Obligatoire pour la voie "Finance"
- Economics of Uncertainty and Finance

Obligatoire pour la voie "Business Research"
- Game Theory and Economic Analysis

Période 2 - Hiver
Choisir une voie
- Business Economics
- Economics research
- Finance

Période 3 - Printemps
Stage de recherche
- Economie d'entreprise et Microéconomie
- Economie internationale et politique économique
- Banque, finance

Dernière mise à jour: jeu. 26 juillet 2012

ECO559 Financial Markets

The goal of this course is to develop a working knowledge of the interplay between strategies of firms and financial markets. In this course, students will learn to address the above question of the performance of firms through the following perspectives:

- The link between economic and financial performance
- The role of competitive advantage to build economic performance
- The role of corporate governance
- The determinants of the market valuation of the firm

This course is not a mathematical course (a topic which receives excellent coverage elsewhere at Polytechnique), nor a catalog of consulting firm's methodologies. This is not a problem-solving course either. Instead, it is expected from the students that they develop a personal thinking in an autonomous way. We trust this shall be useful to them through the course of their careers.

Each class is divided in two parts. First, a presentation is given of the themes which are relevant for the understanding of the topic (eg. the interplay of markets and capitalism, the nature of competitive advantage, valuation tools, etc.) and the understanding of mechanisms leading to market failures. Second, a case study takes place on the basis of documents distributed in advance, or with a guest speaker.
Students are asked to have read these documents and provide a synthesis of their thoughts on the topic (bullet points).
A particular emphasis is placed on training structured understanding of current business and economic topics. Each students is asked at some point in the course to prepare a 5mn "briefing" on a current topic. Examples from last year: "Airbus and Japan"; "Quantitative easing"; "currency war", etc.

Content: This course is divided into four main topics.

1) Capitalism in 2011
   - Current issues
   - Lessons from the 2007 crisis

2) Corporate governance and the financing of the firm
   - Financing the firm and the Modigliani-Miller theorem
   - Historical perspective and international comparison (stockholder versus stakeholder models)
   - Economic analysis of compensation policies: stock options, bonus

3) Competition analysis and organization theory
   - What are the determinants of market structure?
   - From market structure to economic performance, How to enhance one's competitive position?
   - Generic strategies with illustrations
   - Coordination and incentives as key issues of organization
   - Understanding functional, multidivisional, and matrix organizations

4) Financial analysis
   - Understanding accounting figures (P&L, balance sheet)
   - From accounting to financial analysis (internal and external indicators, cost of capital, CAPM)
   - Risk management
   - Understanding the recommendations made by analysts

Course taught in English

Niveau requis

No Prerequisites in Economics required

Modalités d'évaluation

Students are evaluated through their participation in class, oral and written presentations by groups, oral briefings. There will be a 1hr essay to complete on the day of the last course.

Responsable : Philippe Tibi
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 16 octobre 2012

MAP551 Probability Theory for Financial Economics

The goal of this course is to introduce the main concepts in Probability Theory in a rigorous setting. Being at ease with the notions presented in this course is essential in Economics and Finance.

Course Outline:
1. Measure and Integration
2. The probabilistic model
3. Law of random variables
4. Random vectors
5. Convergence of random variables
6. Law of Large Numbers
7. Central Limit Theorems
8. Conditional expectation, conditional law

Bibliography:
BILLINGSLEY, P., Probability and Measure, Wiley
CHUNG, K.L., A course in Probability Theory, Academic Press
GRIMMET, G., STIRZAKER P. Probability and Random Processes, Oxford University Press

Only for the PA QEF students
Cours dispensé en Anglais

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 21 février 2013

ECO556 Microeconomics

Course Objective:
This course provides the fundamental concepts of microeconomic analysis. The course first focuses on general equilibrium theory, before introducing market failures (imperfect competition and public economics).

Syllabus:
Individual Choice Theory
Supply

Deman
Partial equilibrium
General equilibrium
Public Economics
Imperfect competition

Course taught in English

Textbooks:
A. Mas-Colell, J. Green et M. Whinston, « Microeconomic Theory », Oxford University Press, 1995.
B. Salanié, « Microeconomics of Market Failures », MIT Press, 2000.

Responsable : Marie-Laure Allain
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mercredi 12 décembre 2012

ECO557 Econometrics

This course focuses on the statistical tools needed to understand empirical economic research.

Topics include statistical inference, regression, generalized least squares, instrumental variables, simultaneous equations models.

List of topics :
Ordinary least squares: geometric, statistical and asymptotic properties
Ordinary least squares: Heteroskedasticity (with applications to panel data and times series)
Instrumental variables
Generalized method of moments (with applications to endogenous variables)
Selectivity
Evaluation

Course taught in English

Responsable : Bruno Crépon, Mathias ANDRE
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mercredi 21 novembre 2012

ECO561 Macroeconomics : business cycles

This course is an introduction to modern macroeconomics. Students are initially equipped with the necessary tools to solve dynamic problems in economics. These techniques are then applied to address a number of important issues in macroeconomics, including the analysis of the business cycle. All these

issues are investigated within a common framework which emphasizes the importance of microfoundations, rational expectations and general equilibrium.
By the end of the course, students should have a reasonable knowledge of the current state of macroeconomics, they should be able to read a large share of the recent academic literature in the field and they should be able to address many macroeconomic policy questions.

1. IS-LM, AS-AD, The Phillips Curve
2. Methods: Detrending and Dynamic Programming
3. Monetary Economics & Policy
4. The Ramsey model
5. Real Business Cycle Theory
6. The New Keynesian Framework
7. Asset Pricing
8. Search Models of the Labor Market
9. Heterogeneity in Macroeconomics

Course taught in English

Responsable : Jean-Baptiste Michau
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 11 avril 2013

ECO573 Economics of Uncertainty and Finance

Le but de ce cours est de fournir aux étudiants une connaissance qu'ils pourront mettre en pratique des outils conceptuels et des modèles basiques de l'économie financière. Le cours insistera sur les notions d'équilibre et de décision dans l'incertain.

Course Outline:
- Introduction: What is finance? The financial system, instruments and markets.
- Interest rates, compounding and bond pricing: Net present value and discounting, Term structure of interest rates
- Valuing income streams under certainty: Life-cycle savings: What determines interest rates?, Production, impatience and equilibrium interest rates
- Valuing income streams under uncertainty: State-space representation of uncertainty, von Neuman-Morgenstern utility, Risk aversion and risk premia, Arrow securities and portfolios, state prices and equilibrium asset pricing, optimal mean-variance portfolios, the Capital Asset Pricing Model, Introduction to the arbitrage pricing model
- CAPM and corporate financing: the Modigliani-Miler theory: debt and equity
-The efficient markets hypothesis: a theoretical explanation, some empirical findings
- Derivatives and arbitrage pricing: the basic theory of arbitrage pricing, option pricing

Nuemrus Clausus : 50

Course taught in English

Responsable : Eduardo Perez
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 02 juillet 2012

ECO574 Game Theory and Economic Analysis

Game theory is a mathematically formalized theory of strategic interactions. One important field of application is economics, where game theory is used to analyze a vast variety of interactions, ranging from individuals within organizations, to firms competing in markets and nations engaged in international negotiations. In most instances, no single party, or player, can determine the outcome single-handedly; the outcome usually depends on several or all participants' behavior.
What is a player's best current move depends in part on moves already made, expected future moves, and on how others' future moves are influenced by the player's own current move. Hence, players' actions, information and expectations may be intertwined in a complex and fascinating pattern. The analysis of these interdependences is precisely what game theory is all about.

This course provides an introduction to non-cooperative and evoutionary game theory, two main fields within game theory. Our course contains rigorous mathematics as well as a variety of applications to economics. We will also briefly consider applications to political science (rational voting and electoral competition) and biology (adaptation of behaviors towards optimality). Participants will learn to master central game-theoretic concepts, methods and results that are used in modern economics, political science and evolutionary biology.

Course outline :
1. Introduction
2. Informal examples
3. Preference representation
4. The extensive and normal forms
5. Normal-form analysis
6. Extensive-form analysis
7. Evolutionary stability
8. Population dynamics
9. Euclidean games
10. Repeated games

Course taught in English

Readings :
- J. Weibull (2009): Lecture Notes in Game Theory (Ecole Polytechnique, Polycopy). [required reading]
- M. Osborne (2004): An Introduction to Game Theory. Oxford University Press. [recommended as additional reading]

Responsable : Rida Laraki, Yukio Koriyama
Période : Automne
Nombre d'heures : 36

Crédits ECTS : 4
Dernière mise à jour : lundi 02 juillet 2012

Ingénieur

Business Economics

Langue du programme: Anglais

Composition du programme :

Seulement pour les X

3 cours au choix

- Economics of Contracts
- Public Economics, Welfare, and Institutions
- Analyse économique des secteurs énergétiques
- Economic Growth and Sustainability
- Industrial Organization
- Organizational Economics and Corporate Finance
- Financial Macroeconomics
- Times Series Analysis

1 Enseignement d'Approfondissement au choix

- Economics and Competition Policy
- Applied Microeconometrics

Dernière mise à jour: jeu. 26 juillet 2012

ECO560 Economics of Contracts

This course has a strong methodological component. It introduces basic models in contract theory (or economics of information), which are illustrated through applications to price discrimination, taxation, insurance, compensation policies, educational choice, auctions, and regulation. The course also presents some concepts in dynamic contract theory, such as commitment, renegotiation, and incomplete contracts. Finally, it relates the covered material to mechanism design.

The topics are presented through the Principal-Agent paradigm, i.e. the strategic interaction of two economic agents within a Stackelberg game: one party who possesses information affecting the welfare of both (informed party) and one who does not have this information (uninformed party). The information is either about what the informed party does (hidden action) or about what her characteristics are (hidden information). Depending on the type of information and who acts first, the course focuses on three types of models:

- Screening models, which involve hidden information and in which the uninformed party acts first;

• Signaling models, which again involve hidden information but the initiative belongs to the informed party; and
• Moral hazard models, which involve hidden action and the uninformed party moves first.
It then considers some issues arising from the repeated interaction of the informed and uninformed parties. At the end, the main topics of the course are reviewed within a brief introduction to mechanism design.

The course builds on basic concepts in game theory and decision-making under uncertainty. Knowledge of strategic and extensive games of imperfect information is recommended. There are 9 main lectures (1:30 each) followed by two-hour exercise classes whose purpose is to familiarize the students with the techniques involved. Evaluation is based on a final written examination and weekly problem sets.

List of Lectures

1. Introduction to contract theory: information, uncertainty, and decisions
2. Screening: a basic model
3. Screening: extensions and applications
4. Signaling: review of related game theory and an introduction to auctions
5. Signaling: models of costly and costless signaling
6. Moral hazard: a basic model
7. Moral hazard: extensions and applications
8. Dynamic contracts: an introduction
9. Dynamic contracts: continued

References

The following books are recommended as they cover part of the material for the course:

Bolton, P., and M. Dewatripont. 2004. Contract Theory. Cambridge: MIT Press.
Fudenberg, D. and J. Tirole. 1991. Game Theory. Cambridge: MIT Press.
Laffont, J.-J. 1989. Economics of Information and Uncertainty. Cambridge: MIT Press.
Laffont, J.-J. and D. Martimort. 2001. The Theory of Incentives: the Principal – Agent Model. Princeton: Princeton University Press.
Mas-Colell, A., J. Green, and M. Whinston. 1995. Microeconomic Theory. Oxford: Oxford University Press.
Salanié, B. 2005. The Economics of Contracts: a Primer. Cambridge: MIT Press.

Course taught in English

Responsable : Raïcho Bojilov
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

ECO563 Public Economics, Welfare, and Institutions

Description:
The course is an introduction, as complete as possible, to the various aspects of modern Public Economics: welfare economics, externalities and public choice theory, political economy. It first recalls the classical

theory of market failures due to externalities and public goods. This part is illustrated by interventions from practionnioners about the regulation of transports, of telecomunications, and of the environment. The course also studies the Economics approaches to welfare and justice, from the empirical and the analytical points of view. It then turns to economic theories of Politics and institutions.
The course is tought in English.

List of topics:
1. Theory of public goods and externalities.
2. Management of public monopolies and regulation.
3. Environmental regulation.
4. Income taxation and redistribution.
5. Empirics on welfare and justice: opinions, experiments.
6. Economic theories of welfare and justice: Bentham and Arrow
7. Equity in practice: Inequality measurement, no-envy.
8. Intergenerational concerns.
9. Economic theory of democracy.

Main references:
A. Mas-Colell, M. Whiston and J. Green, Microeconomic Theory. Oxford University Press;
B. Salanié, The Economics of Market Failures, MIT Press.
M. Fleurbaey, Théories économique de la justice. Economica;
H. Moulin, Cooperative Microeconomics: A Game-theoretic Introduction. Princeton University Press

Course taught in English

Responsable : Jean-François Laslier, Yukio Koriyama
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : dimanche 20 janvier 2013

ECO564 Analyse économique des secteurs énergétiques

L'objectif de cet enseignement est de fournir tout à la fois le cadre le plus rigoureux possible d'analyse économique des questions énergétiques, des données concrètes et quelques outils de calcul, à des élèves ayant opté pour des formations à dominante technique dans l'énergie et la mécanique. Il vise dès lors un double but de formation (théories, méthodes,…) et d'information (données statistiques, questions d'actualité).

Plan du cours :
Rappels utiles de microéconomie
- Contenu : Maximisation des surplus ; Monopoles et régulations ; Formes d'oligopoles ; Compléments et substituts stratégiques ; Concurrence potentielle.
- Concepts économiques : tarification de Ramsey-Boiteux ; équilibres de Cournot, Bertrand, Stackelberg ; Prix limite.

Economie du pétrole
- Contenu : Données économiques et historiques (« cartels et chocs ») ; Sentiers de prix optimaux ;

Aspects géopolitiques.
- Concepts économiques : modèle de Hotelling pour une ressource non-renouvelable; Firme dominante (Forchheimer) et formation des cartels.

Economie de l'électricité
- Contenu : Economie d'un bien non stockable ; Concurrence et formes de régulation ; Stratégie des acteurs en Europe ; Questions politiques et institutionnelles.
- Concepts économiques : Indices de concentration (Lerner, HHI,…) ; Jeu de Stackelberg (exemple numérique).

Economie du gaz
- Contenu : Spécificités économiques et géopolitiques ; Nouvelles structures de marché (relations verticales).
- Concepts économiques : Oligopoles ; Coûts de transaction ; Taxonomie des comportements stratégiques (d'après Tirole).

Principes et pratiques de la régulation
- Contenu : Théories des formes de régulation et des équilibres économiques dans les industries de réseaux ; Perspectives historique et comparative (entre industries et entre pays).
- Concepts économiques : Régulations de Ramsey-Boiteux, de « cost plus » (Averch-Johnson), de « price-cap », par concurrence potentielle.
- Outils pratiques : Etude de cas : le GRT-gaz belge Fluxys (coût des capitaux, WACC, aspects comptables et institutionnels).

Calculs économiques comparatifs des différentes filières de production d'électricité (étude de cas)
- Concepts économiques : Coûts moyens et marginaux de court terme et long terme; Coûts fixes et variables ; Parc optimal.
- Outils pratiques : Prise en compte des risques (pays, filières, retour sur le calcul du coût des capitaux).

Etude de cas industriel : Le marché des équipements de production

Etude de cas géopolitique : La Russie

Responsable : Jean-Pierre Hansen
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 14 mars 2013

ECO565 Economic Growth and Sustainability

Course description:
The notion of a green economy is raising as much hope as skepticism nowadays. Is economic growth really compatible with environmental preservation? Are our economies on a sustainable development path? To be sure, social demands and regulations to preserve the environment impose constraints on economic agents. If economic growth is to someday turn green, these constraints will have to transform into opportunities. This course will cover some of the means that may lead into this direction, such as green accounting, sustainability indicators, and innovation-enhancing environmental policy.

Outline:
– The environmental impact of economic activity
IPAT and Kaya equations
Green accounting
- Sustainable development
Economic concepts of sustainability
GDP measures and sustainability - The OECD approach
- The growth-environment relationship
The Environmental Kuznets Curve and the Hartwick rule
The Hotelling model and the green paradox
- Green innovation and growth
Green growth models with exogenous and endogenous technical change
Environmental policy as a catalyst for innovation - The Porter hypothesis
The environmental goods and services industry (or ‘eco-industry’)

Indicative references:
Perman R., Ma Y., McGilvray J. & M. Common. (2003). Natural resources and environmental economics. Pearson, Addison Wesley. Third edition.
Kolstad C. 2010. Environmental economics. Oxford University Press. Second edition.

Course taught in English

Responsable : Patricia Crifo, Bernard Sinclair-Desgagné, Jean-Marc Bourgeon
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 26 février 2013

ECO566 Industrial Organization

L'exercice du pouvoir de monopole : tarification, biens durables et discrimination. Interaction stratégique : concurrence en prix, quantités, capacités ; segmentation du marché et positionnement stratégique. Collusion tacite, investissement et d'innovation, barrières à l'entrée stratégiques.

Cours dispensé en anglais

Responsable : Patrick Rey
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : vendredi 18 janvier 2013

ECO567 Organizational Economics and Corporate Finance

La première partie du cours étudie les théories de l'organisation des entreprises. On commencera par discuter la question des « frontières de la firme ». Dans quelles conditions l'entreprise décide-t-elle de faire elle-même, ou de sous traiter ? Dans quelles conditions le passage par le marché domine-t-il la coordination interne, via l'autorité ? Pour comprendre la notion de hiérarchie, on discutera ensuite les méthodes de coordination au sein de l'entreprise, ainsi que la circulation de l'information, sous un angle théorique mais aussi théorique. Toutefois, si l'entreprise permet de coordonner efficacement différents aspects de la production, il est clair qu'il faut tenir compte du fait que les employés peuvent être plus ou moins motivés. On s'attachera donc à comprendre l'efficacité et les limites des schémas incitatifs dans une entreprise. Finalement, la partie organisation s'intéressera aux théories économie de l'autorité et de la culture d'entreprise, question jusque récemment laissées aux sociologues et spécialistes de la stratégie.

La seconde partie du cours abordera, sous un angle économique, trois questions de finance d'entreprise. L'outil sera la théorie des contrats. Premièrement, nous nous attacherons à comprendre l'arbitrage entre financement par endettement et financement par capitaux propres. Nous verrons que pour la plupart des entreprises, le seul mode de financement externe viable est l'endettement, et que l'investissement est en général sous optimal. Nous nous intéresserons ensuite au capital risque, un secteur exceptionnel puisqu'il finance en fonds propres, et non par endettement. Nous nous attacherons à en comprendre les particularités. Finalement, nous nous intéresserons au cas des grandes entreprises cotées en bourse, sans actionnaire dominant. Nous verrons les coûts d'un management sans actionnaire, et les OPAs comme mécanisme de discipline.

Course taught in English

Responsable : Laurent Linnemer, Philippe Choné
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 14 mars 2013

ECO569 Financial Macroeconomics

Course description:

The purpose of this class is to cover the monetary economics through the institutions that create and manage money, how monetary policy interacts with the business cycle and how it is transmitted through the financial system. The treatment of these "eternal" issues will be anchored in the analysis of recent and current events, including monetary policy in the OECD countries since the 1970s and the ongoing financial and sovereign debt crisis in the euro area.

The exercises will lead students to become familiar with macroeconomic and financial time series data.

Main references:

-Acharya and Richardson: Restoring Financial Stability: How to Repair a Failed System, Wiley Finance, 2010
-Benigno: A simple New Keynesian AD-AS model
-Boivin, Ginannoni and Mojon: The transmission of monetary policy in the euro area

-Drumetz et Pfister: La politique monétaire, De Boeck 2010
-Freixas and Rochet: Microeconomics of Banking, MIT press, 2008
-Woodford: The fiscal multiplier at the zero lower bound, AJE macro 2009

Outline

1. Macroeconomic stabilisation policies
   A simple New Keynesian AD-AS model
   Monetary and fiscal policies
   The dynamic budget constraint of the government
References: Benigno

2. The “pre crisis” dominant monetary policy doctrines
   From the 1970s Great inflation to central bank independance
   - Time inconsistency, inflation bias and delegation
   - The Taylor principle and indeterminacy
   Inflation targeting
References: Benati and Goodhart Handbook chapter; Orphanides; Diron and Mojon

3. The transmission of monetary policy
   The yield curve
   The exchange rate channe
   The credit channel
References: Fisher; Boivin, Giannnoni and Mojon

4. The liquidity trap
   The zero lower bound on interest rates
   Non conventional monetary policies
   The fiscal multiplier at the zero lower bound
References: Woodford AEJ 2009; Orphanides; Eggertson and Krugman

5. Banks and the central bank
   Financial intermediation
   The balance sheet of the central bank
   The money multiplier
References: Freixas and Rochet banking textbook; ECB/FED; Drumetz and Pfister

6. Financial cycles and crises
   Credit risk premia and credit rationing
   The financial accelerator and the credit channel
   Credit cycles
   Private and public supply of liquidity (if time allows)
References: Gilchrist and Zakrajsek, Gilchrist and Mojon, Freixas and Rochet textbook; Carlstrom and Fuerst; Holmstrom and Tirole; Kiyotaki

7. Financial regulation
   Capital requirements
   Liquidity requirements
   Margin calls
   Macro-prudential policies

References: Archava and Richardson; The Vikers Report

8. The euro area 2010-2012 crisis
   Exchange rates and monetary policy
   Real exchange rates and trade
   Optimal currency areas
   Public debt dynamics and multiple equilibria
References: TBC

9. Wrapping up + exam preparation

Responsable : Benoît Mojon
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 21 janvier 2013

MAP565 Times Series Analysis

Ce cours introduit les méthodes d'analyse, d'estimation statistique et de prédiction des séries chronologiques. Ces types de traitement statistique sont utilisés dans de nombreux domaines, des sciences de l'ingénieur aux sciences sociales, tels que l'économétrie, l'hydrologie, les problèmes de détection, localisation et poursuite de cibles, la métrologie réseau, etc. Le cadre des propriétés du second ordre et de la prédiction linéaire permettra dans un premier temps une description détaillée des approches statistiques les plus répandues d'analyse et de traitement de données temporellement dépendantes. Ces méthodes d'analyse temporelle ou spectrale s'appliquent à une vaste classe de modèles stationnaires. Le cas des modèles espace-état linéaires seront ensuite étudiés. Des algorithmes numériques pour la prédiction et l'inférence statistique seront obtenus dans ce contexte. Cette approche de la modélisation sera étendue à l'étude de modèles espace-état non-linéaires. Ceci permettra de prendre en compte différents types de dépendances temporelles en vue de traitements statistiques efficaces. Enfin, nous consacrerons un cours au principe d'invariance d'échelle et son utilisation pour tester des hypothèses statistiques.

Les principaux prérequis sur lesquels ce cours repose sont les bases de géométrie hilbertienne et de probabilité. Une formation en modélisation stochastique, statistiques et/ou en traitement de signal compléteront idéalement ces bases.

En fin de module, un étudiant sera capable d'appliquer les méthodes d'inférence statistique et de prédiction liés à la modélisation des séries temporelles par des processus linéaires stationnaires ou dynamiques. Il sera d'autre part sensibilisé aux approches non-linéaires et aux limites des modèles stationnaires.

Cours dispensé en anglais

Niveau requis
MAP432 ou MAP 433 ou MAP555

Modalités d'évaluation

Contrôle de connaissances (écrit) et mini-projet facultatif (en binôme).

Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 21 mars 2013

ECO582 Economics and Competition Policy

Le cours a une orientation d'économie appliquée : chaque séance présente les modèles économiques pertinents et une analyse de cas marquants dans les diverses jurisprudences (USA, Europe, France).

Les principaux thèmes abordés sont : notion de marché pertinent, pouvoir de marché et ententes, contrôle des concentrations, abus de position dominante (prix prédateurs), restrictions verticales, droit de la concurrence et régulation.

Cours dispensé en Anglais

Responsable : Verge Thibaud, David Sevy, Philippe Choné
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 18 décembre 2012

ECO586 Applied Microeconometrics

Four sessions are planned, each session being dedicated to a specific theme and specific tools:

List of topics :
Empirical industrial organization: evaluation of mergers
Empirical analysis of auctions
Empirical analysis of insurance contracts
Empirical assessment of public policies

Responsable : Philippe Février
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

Ingénieur

Economics research

Langue du programme: Anglais

Composition du programme :

3 cours au choix

- Economics of Contracts
- Financial Macroeconomics
- Development Economics
- Decision Theory
- Advanced Microeconomics

1 Enseignement d'Approfondissement

- Applied Microeconometrics

Dernière mise à jour: jeu. 26 juillet 2012

ECO560 Economics of Contracts

This course has a strong methodological component. It introduces basic models in contract theory (or economics of information), which are illustrated through applications to price discrimination, taxation, insurance, compensation policies, educational choice, auctions, and regulation. The course also presents some concepts in dynamic contract theory, such as commitment, renegotiation, and incomplete contracts. Finally, it relates the covered material to mechanism design.

The topics are presented through the Principal-Agent paradigm, i.e. the strategic interaction of two economic agents within a Stackelberg game: one party who possesses information affecting the welfare of both (informed party) and one who does not have this information (uninformed party). The information is either about what the informed party does (hidden action) or about what her characteristics are (hidden information). Depending on the type of information and who acts first, the course focuses on three types of models:
• Screening models, which involve hidden information and in which the uninformed party acts first;
• Signaling models, which again involve hidden information but the initiative belongs to the informed party; and
• Moral hazard models, which involve hidden action and the uninformed party moves first.
It then considers some issues arising from the repeated interaction of the informed and uninformed parties. At the end, the main topics of the course are reviewed within a brief introduction to mechanism design.

The course builds on basic concepts in game theory and decision-making under uncertainty. Knowledge of strategic and extensive games of imperfect information is recommended. There are 9 main lectures (1:30 each) followed by two-hour exercise classes whose purpose is to familiarize the students with the techniques involved. Evaluation is based on a final written examination and weekly problem sets.

List of Lectures

1. Introduction to contract theory: information, uncertainty, and decisions

2. Screening: a basic model
3. Screening: extensions and applications
4. Signaling: review of related game theory and an introduction to auctions
5. Signaling: models of costly and costless signaling
6. Moral hazard: a basic model
7. Moral hazard: extensions and applications
8. Dynamic contracts: an introduction
9. Dynamic contracts: continued

References

The following books are recommended as they cover part of the material for the course:

Bolton, P., and M. Dewatripont. 2004. Contract Theory. Cambridge: MIT Press.
Fudenberg, D. and J. Tirole. 1991. Game Theory. Cambridge: MIT Press.
Laffont, J.-J. 1989. Economics of Information and Uncertainty. Cambridge: MIT Press.
Laffont, J.-J. and D. Martimort. 2001. The Theory of Incentives: the Principal – Agent Model. Princeton: Princeton University Press.
Mas-Colell, A., J. Green, and M. Whinston. 1995. Microeconomic Theory. Oxford: Oxford University Press.
Salanié, B. 2005. The Economics of Contracts: a Primer. Cambridge: MIT Press.

Course taught in English

Responsable : Raïcho Bojilov
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

ECO569 Financial Macroeconomics

Course description:

The purpose of this class is to cover the monetary economics through the institutions that create and manage money, how monetary policy interacts with the business cycle and how it is transmitted through the financial system. The treatment of these "eternal" issues will be anchored in the analysis of recent and current events, including monetary policy in the OECD countries since the 1970s and the ongoing financial and sovereign debt crisis in the euro area.

The exercises will lead students to become familiar with macroeconomic and financial time series data.

Main references:

-Acharya and Richardson: Restoring Financial Stability: How to Repair a Failed System, Wiley Finance, 2010
-Benigno: A simple New Keynesian AD-AS model
-Boivin, Ginannoni and Mojon: The transmission of monetary policy in the euro area
-Drumetz et Pfister: La politique monétaire, De Boeck 2010

-Freixas and Rochet: Microeconomics of Banking, MIT press, 2008
-Woodford: The fiscal multiplier at the zero lower bound, AJE macro 2009

Outline

1. Macroeconomic stabilisation policies
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2. The “pre crisis” dominant monetary policy doctrines
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   - The Taylor principle and indeterminacy
   Inflation targeting
References: Benati and Goodhart Handbook chapter; Orphanides; Diron and Mojon

3. The transmission of monetary policy
   The yield curve
   The exchange rate channe
   The credit channel
References: Fisher; Boivin, Giannnoni and Mojon

4. The liquidity trap
   The zero lower bound on interest rates
   Non conventional monetary policies
   The fiscal multiplier at the zero lower bound
References: Woodford AEJ 2009; Orphanides; Eggertson and Krugman

5. Banks and the central bank
   Financial intermediation
   The balance sheet of the central bank
   The money multiplier
References: Freixas and Rochet banking textbook; ECB/FED; Drumetz and Pfister

6. Financial cycles and crises
   Credit risk premia and credit rationing
   The financial accelerator and the credit channel
   Credit cycles
   Private and public supply of liquidity (if time allows)
References: Gilchrist and Zakrajsek, Gilchrist and Mojon, Freixas and Rochet textbook; Carlstrom and Fuerst; Holmstrom and Tirole; Kiyotaki

7. Financial regulation
   Capital requirements
   Liquidity requirements
   Margin calls
   Macro-prudential policies
References: Archava and Richardson; The Vikers Report

8. The euro area 2010-2012 crisis
    Exchange rates and monetary policy
    Real exchange rates and trade
    Optimal currency areas
    Public debt dynamics and multiple equilibria
References: TBC

9. Wrapping up + exam preparation

Responsable : Benoît Mojon
Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 21 janvier 2013

ECO583 Development Economics

ECO 583 Growth theory and Development

This course is the first half of the course ”Growth and Development” taught jointly by Eric Strobl and Francis Bloch. One way to think about the difference between the ”Growth Theory” part of the course and the ”Development Economics” part is that the former is more ”macro” and the latter more ”micro”. Nevertheless both sections deal with similar issues and the tools/papers studied in both sections are complementary. It is assumed that all students have followed a graduate level course in macroeconomics and are familiar with the tools of dynamic programming. The objectives of the course are the following :
· To present the basic workhorse models of the field
· To review empirical evidence, confront the evidence with the theory and identify research challenges.
This course will cover several of the main topics current in the fields of growth and development economics.

List of topics :
1. Business cycles vs. long-run growth. Evidence. Factor accumulation, the Solow model and convergence.
2. Endogenous population growth, Solow vs. Malthus.
3. Human capital: Extending the Solow model. Externalities and the Lucas puzzle.
4. Optimization in continuous time (Hamiltonians): refresher. Research and Development, and the Romer model. Scale effect: implications and evidence.
5. Evolution of the literature on a number of growth-related issues.
6. Growth and development.
7. The role of institutions and history.
8. Poverty.
9. Civil Conflict.
10. Health and Economic Development.
11. Labor markets.
12. Intra-Household Allocation of Resources in Developing Economies
13. The Role of Trade in Economic Development

Organization of the course:
Each half of the course is graded out of 100 marks. As far as the "Growth Theory" section is concerned, the

100 marks are divided as follows:

2 short Problem Sets graded out 10 marks each
1 long Problem Set graded out 20 marks
1 open book exam graded out 60 marks

Course Content

Lecture 1:
· Intoduction
Business cycles vc. long run growth
Some cross-sectional and time series evidence

· Factor accumulation
Solow model

References:
-Cost of Business Cycles with Indivisibilities and Liquidity Constraints; By Imrohoroglu, Ayse; Journal of Political Economy, December 1989, v. 97, iss. 6, pp. 1364-83
-On the Evolution of the World Income Distribution; by Jones, Charles; Journal of Economic Perspectives, Summer 1997, pp. 19-36
-"Population Growth and Technological Change: One Million B.C. to 1990"; by Kremer, Michael, Quarterly Journal of Economics, August 1993, pp. 681-716
-"Technical Change and the Aggregate Production Function"; by Solow, Robert; Review of Economics and Statistics, August 1957, pp.312-320

Lecture 2:
· Optimization in continuous time (Hamiltonian)

Lecture 3:
· Problem Set 1 (short)
· Factor accumulation (continued)
Convergence
Endogenous population growth
· Human Capital
Extending the Solow model
Evidence (part 1)

References:
-Economic Growth in a Cross Section of Countries; By Barro, Robert J.; Quarterly Journal of Economics, May 1991, v. 106, iss. 2, pp. 407-43
-"Malthus to Solow"; by Hansen, Gary and Edward Prescott; American Economic Review, September 2002, pp. 1205-1217
-"Population, Technology, and Growth: from Malthusian Stagnation to the Demographic Transition and Beyond"; by Galor, Oded and David Weil; American Economic Review, September 2000, pp. 806-828
-"A Contribution to the Empirics of Economic Growth"; by Mankiw, G., David Romer and David Weil ; Quarterly Journal of Economics; May 1992; pp. 407-437
-"Does Schooling Cause Growth?"; By Bils, Mark; Klenow, Peter J.; American Economic Review, December 2000, v. 90, iss. 5, pp. 1160-83

Lecture 4:
· Problem Set 2 (short)
· Human Capital (continued)
Externalities: evidence and applications
The Lucas puzzle

References:
-Productivity Gains from Geographic Concentration of Human Capital: Evidence from the Cities; By Rauch, James E.; Journal of Urban Economics, November 1993, v. 34, iss. 3, pp. 380-400
-Why Doesn't Capital Flow from Rich to Poor Countries?; By Lucas, Robert E., Jr.; American Economic Review, May 1990, v. 80, iss. 2, pp. 92-96

Lecture 5:
Learning by doing and openness to trade

References:
-Lucas, R.E. Jr., 1988, On the Mechanics of Economic Development, Journal of Monetary Economics 22 (1), 3-42
-Stokey, N.L., 1988, Learning by Doing and the Introduction of New Goods, Journal of Political Economy 96(4), 701-717.
-Young, A., 1991, Learning by Doing and the Dynamic Effects of International Trade, Quarterly Journal of Economics 106(2), 369-405.
-Goh, A.T. and J. Olivier, 2002, "Learning by Doing, Trade in Capital Goods and Growth", Journal of International Economics, Vol 56, pp. 411-444

Lecture 6:
· Research and Development
The Romer model

References:
"Endogenous Technical Change", by Romer, Paul; Journal of Political Economy; October 1990 ; pp. S71-S102

Lecture 7:
· Problem Set 3 (long)
· Research and Development (continued)
Scale effect: implications and evidence

Lecture 8:
IN CLASS EXAM

Course taught in English

References:
-"Economic Integration and Endogenous Growth", by Rivera Batiz, Francesco and Paul Romer; Quarterly Journal of Economics 1991, pp. 531-556
-Trade, Growth and Poverty; By Dollar, David; Kraay, Aart; Economic Journal, February 2004, v. 114, iss.

493, pp. F22-49
-Evidence on Growth, Increasing Returns and the Extent of the Market; By Ades, Alberto F.; Glaeser, Edward L.; Quarterly Journal of Economics, August 1999, v. 114, iss. 3, pp. 1025-45
-Time Series Tests of Endogenous Growth Models; By Jones, Charles I.; Quarterly Journal of Economics, May 1995, v. 110, iss. 2, pp. 495-525

Responsable : Eric Strobl, Francis Bloch
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 24 juillet 2012

ECO585A Decision Theory

DECISION THEORY: INTRODUCTION TO DECISION UNDER UNCERTAINTY

The course will emphasize the conceptual foundations of the theory, as well as the mathematical ones. Results will be proven in class when practical, at least in simple versions.

Parts I-IV describe classical theory. In passing, we will discuss deviations from the theory, newer theories, and the like, but these will not be the focus of attention.
Parts V-VI describe newer developments, which violate some of the classical assumptions. It will be argued that these deviations are note necessarily irrational. Thus, the cours does not directly deal with psychological biases or "mistakes".

The course is designed to be taught alongside the course given by Professor Abdellaoui, and these courses are complementary.
The course will have some overlap with the APE course on decision theory (given by Gilboa), but this will be kept to a minimum, so that it would make sense for a student to take both courses.

List of topics

1. Utility Theory: Choice functions and binary relations; representation of a binary relation by a utility function; semi-orders; ordinal and cardinal utility

2. Subjective Probability: de Finetti's representation theorem

3. Decision under Risk: von Neumann-Morgenstern theorem

4. Decision under Uncertainty: Savage's theorem

5. Non-Additive Probabilities: Schmeidler's theoryem (Choquet Expected Utility)

6. Multiple Priors: Maxmin expected utility; the relationship to Choquet expected utility and cores of convex games; alternative models

Requirements
There will be a final examination, as well as one or two midterm examinations. Homework assignments will

be given as we go along, but will not be graded.

TEXTBOOKS
-Fishburn, P.C. Utilily Theory for Decision Making. John Wiley and Sons, 1970.
-Gilboa, I. Theory of Decision under Uncertainty. Cambridge University Press (Econometric Society Monograph Series, n° 45), 2009.
-Kreps, D. Notes on the Theory of Choice. Westview Press: Underground Classics in Economics, 1988.
-Savage, J.L. The Foundations of Statistics. John Wiley and Sons, 1954/1972.

Période : Hiver & Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 31 juillet 2012

ECO585B Advanced Microeconomics

ADVANCED MICROECONOMICS

This is a combination course of Advanced Game Theory and Prospect Theory for Risk and Uncertainty

1. Advanced Game Theory Course Outline
The course may briefly review some fundamental concepts of game theory, depending on the need for such a review.
Then it will address a few selected topics, with economic applications:

1. Games of incomplete information (and auctions)
2. Repeated games (and collusion issues)
3. Cooperative games and matching theory
4. Behavioral and experimental game theory

2. Prospect Theory Course Description
Experimental investigations dating from the early 1950s have revealed a variety of violations of expected utility (EU), the standard model of rational choice under uncertainty. Since the end of the 70's, an enormous amount of effort was devoted to elaborate descriptively viable (fitting the facts) and formally sound generalizations of EU (*). These alternatives are named "Non-expected utility" models. The course will focus on Prospect Theory (PT), one of the most popular descriptive generalization of EU (extensively used in behavioral economics/finance). More specifically, the course have two objectives: (i) providing a formal setup that can help easily understanding where PT deviated from EU and rank-dependent utility (RDU); and (ii) giving the basic tools allowing to test and/or measure individual preferences under risk and uncertainty without assuming EU (**).

(*) There is no overlap between this courses and the course given by Prof. Gilboa (Introduction to Decision under Uncertainty). The two courses are complementary.
(**) This included explaining few economic implications of the introduction of probability weighting and loss aversion.

Courses outline

1. Formal setup
   (Preference relations on Cartesian Products, monotonicity, coordinate independence, tradingoff outcomes, additive representation of preferences).
2. Consistent tradeoffs under uncertainty
   (How to measure utility using tradeoffs with known and unknown probabilities; how to test consistency; consistency conditions for EU and RDU).
3. From rank-dependent utility to Prospect Theory
   (Final asset positions versus gains and losses, reference point, loss aversion, Rabin's paradox).
4. Prospect Theory under Risk
   (Axioms and empirical elicitation of preferences under risk, i.e. utility, probability weighting functions and loss aversion).
5. Prospect Theory under Uncertainty
   (Axioms and empirical elicitation of decision weights when probabilities are unknown).
6. Empirical Evidence on Ambiguity under PT
   (How to elicit ambiguity attitudes under PT, attitudes towards different sources of uncertainty).

Textbooks
Additive representation of preferences
-Krantz, David H., R. Duncan Luce, Patrick Suppes, & Amos Tversky (1971), Foundations of Measurements, Vol. 1 (Additive and Polynomial Representations). Academic Press, New York (2nd editions 1999, Dover).
-Keeney, Ralph & Howard Raiffa (1976): Decisions with Multiple Objectives. Wiley, New York (2nd edition 1993, Cambridge University Press, Cambridge).
-Wakker, Peter (2010): Prospect Theory for Risk and Ambiguity, Cambridge.

Theoretical and experimental results on RDU and Prospect Theory
-Wakker, Peter (2010): Prospect Theory for Risk and Ambiguity, Cambridge.

Course material
You will receive by e-mail a link allowing to download the available material.

Course taught in English at HEC

Modalités d'évaluation
Course requirements
A final examination will take place at the end of the course. The participant will also be asked to prepare a short research report (about 10 pages) on a recent research paper (theoretical or experimental).

Période : Automne
Nombre d'heures : 18
Crédits ECTS : 4
Dernière mise à jour : mardi 31 juillet 2012

ECO586 Applied Microeconometrics

Four sessions are planned, each session being dedicated to a specific theme and specific tools:

List of topics :
Empirical industrial organization: evaluation of mergers
Empirical analysis of auctions
Empirical analysis of insurance contracts
Empirical assessment of public policies

Responsable : Philippe Février
Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : mardi 03 juillet 2012

Ingénieur

Finance

Langue du programme: Anglais

Composition du programme :

3 cours obligatoires
- Asset Pricing
- Corporate Finance
- Financial Econometrics

1 Enseignement d'Approfondissement
- Asset Pricing in the Derivatives Market

Dernière mise à jour: jeu. 26 juillet 2012

ECO588A Asset Pricing

ASSET PRICING

Objective:

This course is an introduction to the modern theory of asset pricing and portfolio theory. It develops foundations for more specialized courses on securities valuation (e.g., derivatives pricing, continuous time finance, empirical estimation of asset pricing models, market microstructure etc...). Topics covered include (i) CAPM, mean-variance analysis, CCAPM, Arrow-Debreu pricing, factor pricing, arbitrage, (ii) asymmetric information and asset pricing, and (iii) derivative pricing in discrete time models.

Organization

1. The course is organized in 8 sessions of four hours.
2. Evaluation: Final Exam (open-book): 100% of the final grade. Final exam is planned on February, 19, 2013.
3. Presence is compulsory.

Texbooks
A good texbook for this course is: "Asset pricing" by George Pennachi, Pearson, 2008

Other useful references are given in the course outline below. Readings for each week are only recommended and not compulsory.

Slides of the lectures will be provided in advance.

Course Outline:
(is approximative and may be modified depending on time constraints)

FINANCIAL ECONOMETRICS

This course will familiarize the students with the technical tools of financial data analysis, with emphasis on asset pricing and time series analysis. The course will be accompanied by twelve hours of lab sessions for computer programming and applications.

BOOKS:
-Calvet, Laurent E., and Adlai J. Fisher (2008). Multifractal Volatility: Theory, Forecasting and Pricing. Elsevier – Academic Press. [CF]

-Campbell, John, Andrew Lo, and Craig MacKinlay (1996). The Econometrics of Financial Markets. Princeton University Press. [CLM]

-Gouriéroux, Christian, and Alain Monfort (1996). Simulation-Based Econometric Methods. Oxford University Press. [GM]

-Maronna, Ricardo A., R. Douglas Martin, and Victor J. Yohai (2006). Robust Statistics: Theory and Methods. Wiley, London. [MMY]

Course outline

1. Maximum Likelihood Estimation and Generalized Method of Moments

   *CLM: Technical Appendix on Estimation Techniques
   Hamilton, James (1994). Time Series Analysis. Princeton University Press, ch. 5 and 14.
   Hansen, Lars (1982). “Large sample properties of generalized method of moments estimators.” Econometrica 50, 1029-1054.

   Newey, Whitney, and Daniel McFadden (1994). “Large sample estimation and hypothesis testing.” In Handbook of Econometrics vol 4, Robert Engle and Daniel McFadden editors, Elsevier – North Holland.

Newey, Whitney, and Kenneth West (1987). “A simple, positive semi-definite, heteroscedasticity and autocorrelation consistent covariance matrix.” Econometrica 55, 703-708.

2. Regime-Switching Models

*Hamilton, James (1994), ch. 22.

*Hamilton, James (2008). “Regime-switching models.” In The New Palgrave Dictionary of Economics. Second Edition. Eds. Steven N. Durlauf and Lawrence E.Blume. Palgrave Macmillan.

Hamilton, James (1989). “A new approach to the economic analysis of nonstationary time series and the business cycle.” Econometrica 57, 357-84.

3. Dynamics of Financial Returns

a. ARCH and GARCH

*CLM, ch 12.2: Models of Changing Volatility

Andersen, Torben, and Tim Bollerslev (1998). ”Answering the skeptics: yes, standard volatility models do provide accurate forecasts.” International Economic Review 39, 885-905.

Bollerslev, Tim (1986). “Generalized Autoregressive conditional heteroskedasticity.” Journal of Econometrics 31, 307-327.

Bollerslev, Tim, Robert F. Engle, and Daniel Nelson (1994). “ARCH Models.” In Handbook of Econometrics vol 4, Robert Engle and Daniel McFadden editors, Elsevier – North Holland.

Engle, Robert F. (1982). “Autoregressive conditional heteroskedasticity with the estimates of the United Kingdom inflation.” Econometrica 50, 987-1008.

Hansen, Peter, and Asger Lunde (2005). “A forecast comparison of volatility models: Does anything beat a GARCH(1,1)?” Journal of Applied Econometrics 20, 873-89.

Pagan, Adrian, and William Schwert (1990). “Alternative models for conditional stock volatility.” Journal of Econometrics 45, 267-90.

West, Kenneth, and Dongchul Cho (1995). “The predictive ability of several models of exchange rate volatility.” Journal of Econometrics 69, 367-91.

b. Stochastic Volatility

Andersen, Torben, and Luca Benzoni (2008). “Stochastic volatility.” In Encyclopedia of Complexity and System Science, ed. B. Mizrach. Springer.

Andersen, Torben, and Bent Sorensen (1996). ”GMM estimation of a stochastic volatility model: a

Monte Carlo study." Journal of Business and Economic Statistics 14, 328-52.
Barndorff-Nielsen, Ole, and Neil Shephard (2001). "Non-Gaussian Ornstein-Uhlenbeck-based models and some of their uses in financial economics." Journal of the Royal Statistical Society B 63: 167-241.

Comte, Fabienne, and Eric Renault (1998). Long memory in continuous time stochastic volatility models. Mathematical Finance 8, 291-323.

Hull, John, and Alan White (1987). The pricing of options on assets with stochastic volatility. Journal of Finance 42, 281-300.

Taylor, Stephen (1986). Modeling Financial Time Series. John Wiley and Sons.

Wiggins, J. B. (1987), Option values under stochastic volatility: theory and empirical estimates, Journal of Financial Economics 19, 351-372.

c. Multifrequency Modeling

*CF, ch. 1-4.

*Calvet, Laurent E., and Adlai J. Fisher (2004). "How to forecast long-run volatility: regime-switching and the estimation of multifractal processes." Journal of Financial Econometrics 2, 49-83.

Bacry, Emmanuel, Alexey Khozhemyak, and Jean-François Muzy (2008). "Continuous cascade models for asset returns." Journal of Economic Dynamics and Control 32(1), 156-99.

Calvet, Laurent E. (2008). "Fractals." In The New Palgrave Dictionary of Economics. Second Edition. Eds. Steven N. Durlauf and Lawrence E. Blume. Palgrave Macmillan.

Calvet, Laurent E., and Adlai J. Fisher (2001). "Forecasting multifractal volatility." Journal of Econometrics 105, 27-58.

Calvet, Laurent E., Adlai J. Fisher, and Samuel B. Thompson (2006). "Volatility comovement: a multifrequency approach." Journal of Econometrics 131, 179-215.

Lux, Thomas (2008). "The Markov-switching multifractal model of asset returns: GMM estimation and linear forecasting of volatility." Journal of Business and Economic Statistics 26, 194-210.

d. Pricing Multifrequency Risk

*CF, ch. 9-10.

Calvet, Laurent E., and Adlai J. Fisher (2007). "Multifrequency news and stock returns." Journal of Financial Economics 86, 178-212.

4. Simulation-based Econometric Method

a. Simulated Method of Moments

*CLM, ch 2

Duffie, Darrell, and Kenneth J. Singleton (1993). "Simulated moments estimation of Markov models of asset prices". Econometrica 61 (4), 929-52.

Lee, Bong-Soo, and Ingram, Beth (1991). "Simulation estimation of time series models". Journal of Econometrics 47, 197-205.

b. Indirect Inference and Efficient Method of Moments

*GM, ch 4.

Andersen, Torben G., Hyung-Jin Chung, and Bent E. Sorensen (1999). "Efficient method of moments estimation of a stochastic volatility model: a Monte Carlo study." Journal of Econometrics 91 (1), 61-87.

Gallant, A. Ronald, and George Tauchen (1996). "Which moments to match?". Econometric Theory 12, 657-681.

Gouriéroux, Christian, Alain Monfort, and Eric Renault (1993). "Indirect inference. "Journal of Applied Econometrics 8, S85-S118.

Heggland, K. and Frigessi, A. (2004). "Estimating functions in indirect inference." Journal of the Royal Statistical Society, Series B66, 447-62.

Sentana, Enrique, Giorgio Calzolari, and Grabriele Fiorentini (2008). "Indirect estimation of large conditionally heteroskedastic factor models, with an application to the Dow 30 stocks." Journal of Econometrics 146 (1), 10-25.

Smith, Anthony A. (1993). "Estimating nonlinear time series models using simulated vector autoregressions." Journal of Applied Econometrics 8, S63-S84.

5. Filtering

a. The Kalman Filter

Hamilton, James (1994). Time Series Analysis. Princeton University Press, ch. 13.

b. Particle Filters

Arulampalam, Sanjeev, Simon Maskell, Neil Gorgon, and Tim Clapp (2002). "A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking." IEEE Transactions on Signal Processign 50-2) 174-188.

Calvet, Laurent E., and Veronika Czellar (2011). "Efficient estimation of learning models." Working Paper, HEC Paris.

Chopin, Nicolas (2004). "Central limit theorem for sequential Monte Carlo methods and its applications to Bayesian inference." Annals of Statistics 32(6), 2385-2411.

Crisan, Dan, and Arnaud Doucet (2002). "A survey of convergence results on particle filtering methods for practitioners." IEEE Transactions on Signal Processing 50(3) 736-746.

6. Robust Statistics

*MMY, ch. 4 and 5

Czellar, Veronika, G. Andrew Karolyi, and Elvezio Ronchetti (2007). "Indirect robust estimation of the short-term interest rate process." Journal of Empirical Finance 14,564-63.

Czellar, Veronika, and Elvezio Ronchetti (2010). "Accurate and robust tests for indirect inference" Biometricka 97(3), 621-630.
Dell'Aquila, Rosario, Elvezio Ronchetti, and Fabio Trojani (2003). "Robus GMM analysis of models for the short rate process", Journal of Empirical Finance 10, 373-397.

Hampel, Frank R., Elvezio M. Ronchetti, Peter J. Rousseeuw, and Werner A. Stahel (1986), Robust Statistics: The Approach Based on Influence Functions, Wiley-Interscience, New York.

Ortelli, Claudio, and Fabio Trojani (2005). "Robust efficient method of moments." Journal of Econometrics 128, 69-97.

Zaman, Asad, Peter J. Rousseeuw, and Mehmed Orhan (2001). "Econometric applications of high breakdown robust regression techniques." Economics Letters 71, 1-8.

1. Lectures 1 and 2: Equilibrium in Security Markets
   -Arrow Debreu Securities
   -Competitive equilibrium
   -Complete/Incomplete market
   -Pareto optimality and risk sharing
   -Stockastic discount factor risk neutral probabilities pricing kernel
   -Fundamental pricing equation (Consumption based CAPM; one period)

   Reading: Pennachi, Chapter 4

2. Lectures 3 and 4: Mean Variance Analysis, CAPM
   -Efficient Frontier
   -Sharpe ratio
   -CAPM
   -Factor pricing (APT)
   -Beta pricing
   -Factor pricing and CAPM
   -Test of CAPM and zero-beta CAPM

   Reading: Pennachi, Chapters 2 and 3; Cochrane, Chapter 9, Fama and French (1992), (1993).

3. Lecture 4 and 5 : Multi-period extensions
   -Consumption-based CAPM: Multi-period extension

-Risk-free rate and Equity Premium puzzle
-Hansen-Jagannathan Bounds
-Bellman dynamic programming principle
-Lucas'model

Reading: Pennachi, Chapters 5 and 6.

4. Lecture 5 and 6: Toward a resolution of the risk free rate and equity premium puzzles
   -Epstein and Zin GEU
   -Habit formations
   -Keeping up with the Joneses
   -Prospect theory
   -Frictions and liquidity adjusted CAPMI

5. Lecture 6 and 7: Asset Pricing with asymmetric information
   -Competitive equilibrium with private information: Grossman's model
   -Rational expectations and revealing equilibrium
   -Kyle's model of insider trading
   -Adverse selection and liquidity

   Reading: Pennachi, Chapter 16

6. Lecture 7 and 8: Introduction to no-arbitrage pricing of derivated
   -No-arbitrage in liquid/complete markets and option pricing
   -The impact of transaction costs

Course taught in English at HEC

References for reading

-Cochrane J. (2001), "Asset Pricing", Princeton University Press.
-Fama, E. and French, K. (1992), "The cross-section of expected stock returns", Journal of Finance, 47, 427-465.
-Fama, E., and French, K. (1993), "Common risk factors in the returns on stocks and bonds", Journal of Financial Economics, 33(1), 3-56.

Course taught in English at HEC

Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 02 août 2012

ECO588B Corporate Finance

This course is an introductory graduate class to corporate finance. Its main objective is to give students exposure to the state of the art research in corporate finance. It is composed in equal parts of material the

theory of corporate finance, taught by Professor Ulrich Hege, and on empirical research in corporate finance, taught by Professor David Thesmar. Theory and empirical part will be taught in alternating weeks.

The theory part will give students exposure to the modern theories and current research issues in corporate finance. It will begin with an overview of theories of the capital structure and then introducte fundamental contributions in the theory of financial contracting. The course will then proceed to a more topical approach and cover the following issues: IPOs, Venture Capital, Financial Intermediation, Internal Capital Markets, and Takeovers and Corporate Governance.

The empirical sectionof this class will discuss recent empirical research in the field. It will have four sub-sections. Part 1 will be devoted to discussing the literature on the determinants of capital structure decisions, with a particular emphasis on financial contracting and the balance sheet of financial intermediaries.
Part 2 will be devoted to discussing the real effects of financial decisions, and financial shocks, on investment and employment.
Part 3 will cover the research that has grown out of the recent financial crisis (in Europe and the US).
Part 4 concludes with a discussion on the most promising directions of research in corporate finance and adjacent fields (household finance, real estate, entrepreneurship, banking regulation, sovereign debt.

Course Organization and Grades:

This course requires an extensive workload and preparation from students. The course requirements include readings, problem sets, a referee report and a final exam.

. Problem sets: There will be two extensive problem sets, one theoretical and one empirical. They will be handed during the class. You may work in groups of a maximum of three people (collaboration across groups is obviously not allowed). For the empirical part, each group's solution will include a brief (maximum 3 pages) report presenting and discussing the results.

. Final exam: The final exam will consist of a three-hour written exam covering both parts of the course. Class material will be allowed.

The final grade will be based on the following scheme:

.Class participation and problem set: 25%
. Final Exam: 75%

Course taught in English at HEC

Responsable : David Thesmar
Période : Automne
Nombre d'heures : 18
Crédits ECTS : 4
Dernière mise à jour : mardi 31 juillet 2012

ECO588C Financial Econometrics

FINANCIAL ECONOMETRICS

This course will familiarize the students with the technical tools of financial data analysis, with emphasis on asset pricing and time series analysis. The course will be accompanied by twelve hours of lab sessions for computer programming and applications.

BOOKS:
-Calvet, Laurent E., and Adlai J. Fisher (2008). Multifractal Volatility: Theory, Forecasting and Pricing. Elsevier – Academic Press. [CF]

-Campbell, John, Andrew Lo, and Craig MacKinlay (1996). The Econometrics of Financial Markets. Princeton University Press. [CLM]

-Gouriéroux, Christian, and Alain Monfort (1996). Simulation-Based Econometric Methods. Oxford University Press. [GM]

-Maronna, Ricardo A., R. Douglas Martin, and Victor J. Yohai (2006). Robust Statistics: Theory and Methods. Wiley, London. [MMY]

Course outline

1. Maximum Likelihood Estimation and Generalized Method of Moments

*CLM: Technical Appendix on Estimation Techniques
Hamilton, James (1994). Time Series Analysis. Princeton University Press, ch. 5 and 14.
Hansen, Lars (1982). “Large sample properties of generalized method of moments estimators.” Econometrica 50, 1029-1054.

Newey, Whitney, and Daniel McFadden (1994). “Large sample estimation and hypothesis testing.” In Handbook of Econometrics vol 4, Robert Engle and Daniel McFadden editors, Elsevier – North Holland.

Newey, Whitney, and Kenneth West (1987). “A simple, positive semi-definite, heteroscedasticity and autocorrelation consistent covariance matrix.” Econometrica 55, 703-708.

2. Regime-Switching Models

*Hamilton, James (1994), ch. 22.

*Hamilton, James (2008). “Regime-switching models.” In The New Palgrave Dictionary of Economics. Second Edition. Eds. Steven N. Durlauf and Lawrence E.Blume. Palgrave Macmillan.

Hamilton, James (1989). “A new approach to the economic analysis of nonstationary time series and the business cycle.” Econometrica 57, 357-84.

3. Dynamics of Financial Returns

a. ARCH and GARCH

*CLM, ch 12.2: Models of Changing Volatility

Andersen, Torben, and Tim Bollerslev (1998). ”Answering the skeptics: yes, standard volatility models do provide accurate forecasts.” International Economic Review 39, 885-905.

Bollerslev, Tim (1986). “Generalized Autoregressive conditional heteroskedasticity.” Journal of Econometrics 31, 307-327.

Bollerslev, Tim, Robert F. Engle, and Daniel Nelson (1994). “ARCH Models.” In Handbook of Econometrics vol 4, Robert Engle and Daniel McFadden editors, Elsevier – North Holland.

Engle, Robert F. (1982). “Autoregressive conditional heteroskedasticity with the estimates of the United Kingdom inflation.” Econometrica 50, 987-1008.

Hansen, Peter, and Asger Lunde (2005). “A forecast comparison of volatility models: Does anything beat a GARCH(1,1)?” Journal of Applied Econometrics 20, 873-89.

Pagan, Adrian, and William Schwert (1990). “Alternative models for conditional stock volatility.” Journal of Econometrics 45, 267-90.

West, Kenneth, and Dongchul Cho (1995). “The predictive ability of several models of exchange rate volatility.” Journal of Econometrics 69, 367-91.

b. Stochastic Volatility

Andersen, Torben, and Luca Benzoni (2008). “Stochastic volatility.” In Encyclopedia of Complexity and System Science, ed. B. Mizrach. Springer.

Andersen, Torben, and Bent Sorensen (1996). ”GMM estimation of a stochastic volatility model: a Monte Carlo study.” Journal of Business and Economic Statistics 14, 328-52.
Barndorff-Nielsen, Ole, and Neil Shephard (2001). “Non-Gaussian Ornstein-Uhlenbeck-based models and some of their uses in financial economics.” Journal of the Royal Statistical Society B 63: 167-241.

Comte, Fabienne, and Eric Renault (1998). Long memory in continuous time stochastic volatility models. Mathematical Finance 8, 291-323.

Hull, John, and Alan White (1987). The pricing of options on assets with stochastic volatility. Journal of Finance 42, 281-300.

Taylor, Stephen (1986). Modeling Financial Time Series. John Wiley and Sons.

Wiggins, J. B. (1987), Option values under stochastic volatility: theory and empirical estimates, Journal of Financial Economics 19, 351-372.

c. Multifrequency Modeling

*CF, ch. 1-4.

*Calvet, Laurent E., and Adlai J. Fisher (2004). “How to forecast long-run volatility: regime-switching and the estimation of multifractal processes.” Journal of Financial Econometrics 2, 49-83.

Bacry, Emmanuel, Alexey Khozhemyak, and Jean-François Muzy (2008). “Continuous cascade models for asset returns.” Journal of Economic Dynamics and Control 32(1), 156-99.

Calvet, Laurent E. (2008). “Fractals.” In The New Palgrave Dictionary of Economics. Second Edition. Eds. Steven N. Durlauf and Lawrence E. Blume. Palgrave Macmillan.

Calvet, Laurent E., and Adlai J. Fisher (2001). “Forecasting multifractal volatility.” Journal of Econometrics 105, 27-58.

Calvet, Laurent E., Adlai J. Fisher, and Samuel B. Thompson (2006). “Volatility comovement: a multifrequency approach.” Journal of Econometrics 131, 179-215.

Lux, Thomas (2008). “The Markov-switching multifractal model of asset returns: GMM estimation and linear forecasting of volatility.” Journal of Business and Economic Statistics 26, 194-210.

d. Pricing Multifrequency Risk

*CF, ch. 9-10.

Calvet, Laurent E., and Adlai J. Fisher (2007). “Multifrequency news and stock returns.” Journal of Financial Economics 86, 178-212.

4. Simulation-based Econometric Method

a. Simulated Method of Moments

*CLM, ch 2

Duffie, Darrell, and Kenneth J. Singleton (1993). "Simulated moments estimation of Markov models of asset prices". Econometrica 61 (4), 929-52.

Lee, Bong-Soo, and Ingram, Beth (1991). "Simulation estimation of time series models". Journal of Econometrics 47, 197-205.

b. Indirect Inference and Efficient Method of Moments

*GM, ch 4.

Andersen, Torben G., Hyung-Jin Chung, and Bent E. Sorensen (1999). "Efficient method of moments estimation of a stochastic volatility model: a Monte Carlo study." Journal of Econometrics 91 (1), 61-87.

Gallant, A. Ronald, and George Tauchen (1996). "Which moments to match?". Econometric Theory 12, 657-681.

Gouriéroux, Christian, Alain Monfort, and Eric Renault (1993). "Indirect inference. "Journal of Applied Econometrics 8, S85-S118.

Heggland, K. and Frigessi, A. (2004). "Estimating functions in indirect inference." Journal of the Royal Statistical Society, Series B66, 447-62.

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5. Filtering

a. The Kalman Filter

Hamilton, James (1994). Time Series Analysis. Princeton University Press, ch. 13.

b. Particle Filters

Arulampalam, Sanjeev, Simon Maskell, Neil Gorgon, and Tim Clapp (2002). "A tutorial on particle filters for online nonlinear/non-Gaussian Bayesian tracking." IEEE Transactions on Signal Processign 50-2) 174-188.

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6. Robust Statistics

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Statistics: The Approach Based on Influence Functions, Wiley-Interscience, New York.

Ortelli, Claudio, and Fabio Trojani (2005). "Robust efficient method of moments." Journal of Econometrics 128, 69-97.

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Course taught in English at HEC

Période : Automne
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : jeudi 02 août 2012

MAP568 Asset Pricing in the Derivatives Market

Derivative products are an important way for the investors to protect themselves against market risks in the future. The stochastic calculus has enabled the development of this industry. In this course, we will describe the financial products and the methods used by the market to price and hedge them. First, we explain the main concepts of option pricing in the simple framework of discrete-time financial markets and finite probability spaces. Next, after introducing the necessary tools of stochastic calculus, we review the Black-Scholes option pricing theory and the basics of optimal asset allocation in continuous time.

List of topics :
1. Discrete-time financial markets: no-arbitrage, market completeness; optimal portfolio choice.
2. The Cox-Ross-Rubinstein model (binomial tree) and its continuous-time limit.
3. Brownian motion, stochastic integration with respect to Brownian motion and Itô's formula.
4. Continuous-time financial markets and the Black-Scholes model.
5. Optimal asset allocation in continuous-time financial markets; Merton's portfolio problem.

References:
Peter Tankov, Nizar Touzi, "No-arbitrage theory for derivatives pricing", poly Ecole Polytechnique
Darrel Duffie, "Dynamic asset pricing theory", Princeton University Press (2001)

Only for PA QEF students

Modalités d'évaluation
Un examen écrit.

Période : Printemps
Nombre d'heures : 36
Crédits ECTS : 4
Dernière mise à jour : lundi 22 avril 2013

ECO591 Economie d'entreprise et Microéconomie

L'objectif de cette option est de permettre aux élèves de mettre en oeuvre les connaissances formelles acquises à l'Ecole dans le cadre d'une démarche expérimentale personnelle et autonome au sein d'une entreprise.

Le Département d'Economie a des relations suivies avec un certain nombre d'entreprises avec lesquelles il est possible de monter des stages sur des thèmes tels que (liste indicatives) :
l'analyse concurrentielle d'un secteur d'activités ;
la performance financière d'un portefeuille d'actifs en fonction de différents critères liés à la responsabilité sociale des entreprises ;
l'efficacité de certains aspects des politiques de régulation ou des politiques antitrust (fusions, concentrations, relations verticales, position dominante...) ;
l'impact de certaines politiques publiques en matière de compétitivité industrielle (par exemple les politiques liées au changement climatique) ;
l'étude de la performance économique et financière d'un projet d'investissement ou d'une activité ;
le pilotage d'un projet de recherche développement au sein d'une entreprise et/ou avec des partenaires externes ;
l'optimisation d'une "supply chain" dans un système de production distribution ;
la prise en compte d'enjeux associés aux gouvernements d'entreprise (création de valeur, responsabilité environnementale et sociale...) dans les indicateurs de gestion et les tableaux de bord en vue de leur utilisation dans le cycle de gestion.
L'évaluation de politiques de gestion d'actifs, notamment dans le cadre d'une politique d'investissement socialement responsable.

Liste des entreprises donnée à titre indicatif :
-Entreprises industrielles : DuPont, EDF, Electrabel, Lafarge, La Poste, Saint-Gobain, GDF-Suez, Unilever...
-Sociétés de conseil : Estin & Co, LECG, Frontier Economics, CERA, Microeconomix...
-Banques, sociétés d'investissement, gérants de fonds : Axa, AGF, BNP-Paribas, Crédit Agricole, Dexia, CDC, Fonds de réserve des Retraites...
-Centres de recherche : Département d'économie, CIRED, CREST,HEC, CIRANO.

Responsable : Marie-Laure Allain
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011

ECO592 Economie internationale et politique économique

Les options portant sur la macroéconomie et la politique économique proposent des études qui concernent les principaux domaines de l'analyse macroéconomique (par exemple la détermination du change, la nature du chômage...) ou certains problèmes contemporains auxquels sont confrontées les politiques économiques nationales (par exemple monnaie unique, unification allemande, ajustements au sein d'une union monétaire...) ou enfin des problèmes d'économie internationale : stratégies de développement, choix du régime de change, spécialisation internationale...

Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : jeudi 13 septembre 2012

ECO593 Banque, finance

Les domaines de recherche des options se déroulant dans des banques ou dans des organismes d'études économiques et financières s'apparentent à ceux de la microéconomie.Ils s'intègrent dans les travaux d'analyse et de développement d'outils aux implications souvent concrètes et immédiates .

Ils doivent impérativement être en lien avec les domaines d'enseignement du département d'économie et ne pas se contenter d'utiliser les méthodes des mathématiques appliquées sans un minimum de réflexion économique. Les sujets de stage sont potentiellement très variés :

- Valorisation d'une société dans le cadre d'un projet de fusion-acquisition
- Analyse de risque d'un marché ou d'un groupe de contreparties
- Analyse stratégique d'un marché ou d'un type de clientèle
- Lien entre variables macro-économiques et activités bancaires
- Analyse comportementale d'intervenants sur les marchés
- Etc.

Responsable : Antoine Frachot
Période : Printemps
Nombre d'heures : 480
Crédits ECTS : 20
Dernière mise à jour : mardi 04 octobre 2011