Organization of EIEF Graduate Program

2015–2016

The Graduate Program at EIEF focuses on four fields: Applied Microeconomics, Econometrics, Finance, and Macroeconomics. It consists of courses and reading groups taught by EIEF faculty, topics courses and special lectures taught by EIEF visitors, the weekly seminars.

The program is organized into three terms: Fall, Spring and Summer. The Fall and Spring terms each consist of 13 weeks divided into two equal parts of 6 weeks, separated by a mid-term break of one week. The Summer term is shorter, and comprises June and July.

The courses taught by EIEF faculty consist of 20 hours of lectures each, with an "hour" conventionally defined as 50 minutes of actual lecturing plus 10 minutes of pause between lectures. Taught courses may be organized over either 5 or 10 weeks (with, respectively, 4 or 2 hours of lectures per week). Topics courses and reading groups usually consist of about 10 hours each, while special lectures do not have a fixed format. There are two regular weekly seminars, one in Economics and one in Econometrics and Empirical Economics, plus a lunchtime seminar that meets less regularly. The Summer Lectures consists of special lectures offered by EIEF visitors, plus workshops/seminars. The Summer term also includes the 4th Rome Junior Conference on Macroeconomics (aka Pizzanomics). Attendance to the workshop provides students a valuable learning experience.

In the first part of the Fall Term (from mid September to the end of October), EIEF offers review courses in Econometrics, Macroeconomics, Microeconomics and Finance, followed by a final exam. These courses are meant to review, at an advanced level, key methods and results from each of the four fields. They cover material that the students should already know, and should allow students to self-assess their own background training and possibly identify those areas where they need to catch up. Each review course consists of 20 hours of lectures distributed over 5 weeks.

To avoid excessive burden, students are encouraged not to take more than 12 hours of taught courses each week. To test progress in the program, one-week take-home exams are given at the end of January and in mid June.

Calendar of activities

<u>Fall Term</u>:

- First part (review courses): September 21–October 23, 2015
- Deadline for selecting courses to take in the Fall Term: October 23, 2015
- Midterm break: October 26–November 1, 2015
- Exams (review courses): November 2–6, 2015
- Second part: November 9–December 18, 2015
- Fall Term take-home exams: January 18 – 25, 2016

<u>Spring Term</u>:

- Deadline for selecting courses to take in the Spring Term: January 31, 2016
- First part: February 8–March 18, 2016
- Midterm break: March 21–March 27, 2016
- Second part: March 29–May 6, 2016
- Spring Term take-home exams: June 6 – 13, 2016.

<u>Summer Term</u>:

- EIEF Summer Lectures and Seminars: June–July, 2016
- 4th Rome Junior Conference on Macroeconomics (aka Pizzanomics): June, 2016

Taught courses and reading groups

Applied Microeconomics (coordinator: Andrea Pozzi)

The sequence of courses in applied microeconomics aims at building the tools to do frontier applied research in IO, labor and experimental economics. Students are required to take at least three taught courses from the sequence and at least one reading group. Students choosing applied microeconomics as a field are strongly encouraged to also take econometrics. Corporate finance is also a good complement to the IO classes.

<u>Fall Term</u>:

September 21–October 23

- Microeconomics Review Course (20 hours) (Daniele Terlizzese)
  Preferences and utility, choice under uncertainty. Consumer theory. The competitive firm. General equilibrium and welfare. Information economics.

November 9–December 18

- Topics in Industrial Organization (20 hours) (Liliane Giardino-Karlinger)
  This course takes an advanced approach to industrial organization, with a focus on competition theory as applied to antitrust policy. We will start with static oligopoly theory, reviewing the main concepts and game theoretic tools needed to understand strategic interaction in imperfectly competitive markets. We then explore oligopoly theory in a dynamic framework, and investigate how oligopolists can sustain above-competitive levels of profits if they interact repeatedly in the market place. Our findings

will demonstrate how advanced economic theory can inform policy makers (in our case: antitrust authorities) and help them make better choices.

Spring Term:

February 8–March 18

- Industrial Organization (20 hours) (Andrea Pozzi)
  Demand estimation: homogeneous and differentiated goods. Dynamic demand models. Demand and competition with search costs.

March 29–May 6

- Economics and Politics (20 hours) (Marco Battaglini, Stefano Gagliarducci)
  Battaglini: *Focused on analytical models of political institutions, this course is organized around canonical models and their applications. These include models of: electoral competition, voting behavior, bargaining in legislatures, lobbying, communication and cheap talk games, information aggregation in elections.*
  Gagliarducci: *Randomized experiments, regression discontinuity design and difference-in-difference estimators applied to models of preferences aggregation, electoral competition, political agency, legislative organization and bureaucracy.*

- Economics of Networks (20 hours) (Eleonora Patacchini)
  Network topology. Applications of network analysis: education, labor markets, immigration.

Econometrics (coordinator: Franco Peracchi)

The sequence of courses in econometrics aims at providing students with the necessary tools to carry out frontier empirical work in either macroeconomics or microeconomics. It is also the primary field for students whose main interest is econometric theory and its micro or macro applications. During the year, students are required to take at least three taught courses from the sequence and the reading group.

Fall Term:

September 21–October 23

- Econometrics Review Course (20 hours) (Marco Lippi, Giuseppe Ragusa)
  Multivariate ARMA models. Structural VAR models. Cointegration. GARCH and stochastic volatility models. Asymptotic theory for linear and nonlinear estimators. IV and GMM. Models for discrete and limited dependent variables. Panel data models.

November 9–December 18

- Latent Variable Models (20 hours) (Francesco Bartolucci)
  Latent variables and unobserved heterogeneity. The EM algorithm. Generalized linear mixed models. Latent class and latent regression models. Models for panel data based on the state-space formulation. Latent Markov models.

- Topics in Macroeconometrics (20 hours) (Marco Lippi)

Relative importance of permanent and transitory components in GDP growth. Trend-stationary and difference-stationary models. Unobserved components models. Supply and demand components. Real business cycle (RBC) theory. New Keynesian approach vs. RBC.

Spring Term:

February 8–March 18

- Bootstrap and Asymptotic Refinements (20 hours) (Samantha Leorato)
  Asymptotic approximation for the empirical distribution function. Glivenko-Cantelli and empirical central limit theorems. The bootstrap principle. Consistency of bootstrap estimates and remedies to inconsistency. Subsampling and pre-pivoting. Asymptotic refinements. Bootstrap for dependent data.

- Topics in VAR Modeling (20 hours) (Massimo Franchi)
  Representation and inference in stationary and co-integrated systems. Common cyclical features.

March 29–May 6

- Advanced Econometrics (27 hours) (Alberto Holly – HEC Lausanne)
  The purpose of the course is to increase students' knowledge in Advanced Econometrics by deepening some of the topics that they may have learned earlier, or by introducing new concepts. Students should be able, to better understand the theoretical basis of advanced estimation ad hypothesis testing procedures proposed in the recent literature. They should also be able to prove the statistical properties of the estimators or testing procedure that they may develop for their PhD Thesis.

- Finite Mixture Models (20 hours) (Roberto Rocci)
  Finite mixture models for nonparametric estimation of probability density functions and for unsupervised classification. EM algorithm and ML estimation of mixture models. Finite mixture of linear regression models. Choice of the number of components.

- Econometrics of DSGE Models (20 hours) (Giuseppe Ragusa)
  This is a course on the econometric techniques used in estimating dynamic macroeconomic models (DSGE models).

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Finance (coordinator: Luigi Guiso)

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The sequence of courses in Finance is targeted to students who already have a basic knowledge of asset pricing and corporate finance. It is designed to equip them with the analytical tools and econometric techniques that are necessary to carry out research in these areas. The sequence starts with a review of the theory of corporate finance, and then proceeds to two parallel courses in theoretical asset pricing and empirical corporate finance. The Spring term includes four courses: in the first part, a course on empirical asset pricing and one on household finance. In the second part, a course that addresses selected topics in asset pricing and another that focuses on the microeconomics of banking. If time permits, the finance sequence will be rounded off by a reading group.

Fall Term:

September 21–October 23

- Finance Review Course (20 hours) (Sergio Scarlatti, Stefano Herzel)
  The aim of the course is to provide an introduction to the theory of mathematical finance. It is divided into two parts: the first part will present some basic results on Stochastic Processes that are necessary for the study of continuous time models. The second part will show some fundamental results in the theory of Asset Pricing and the Black-Scholes model for option pricing.

November 9–December 18

- Theoretical Asset Pricing (20 hours) (Nicola Borri)
  Consumption-based asset pricing. Contingent claims, discount factors and mean-variance frontiers. Factor pricing models, models with habit formation, models with long-run risk. Topics in empirical asset pricing. Portfolio theory.

- Corporate Finance (20 hours) (Sergei Kovbasyuk)
  Firm valuation, capital structure in perfect markets, financing capacity and agency costs (managerial incentives, credit rationing, liquidity and risk management, lemons problem and market freeze), security design. Some macroeconomic implications of corporate finance (capital squeeze, credit crunch).

- Empirical Asset Pricing (20 hours) (Daniele Massacci)
  Introduction and background. Empirical models of stock returns: linear models for the conditional mean (e.g., white noise, autoregressive random walk, vector autoregressive); nonlinear models for the conditional mean (e.g. threshold, smooth transition, Markov-Switching, and structural break models); volatility models (e.g., RiskMetrics, GARCH models and stochastic volatility). Contagion. Stock returns predictability. Asset allocation. Interval and density forecasts. Risk Management.

Spring Term:

February 8–March 18

- Household Finance (20 hours) (Luigi Guiso)
  Definition of the field, measurement of household preferences and beliefs; the assets side: portfolio allocation and portfolio puzzles; trading, rebalancing; life cycle assets allocation and management. The liability side: choice of mortgages, debt management, default decisions. Household financial capabilities; consumer protection
  .
- Financial Markets, Prices and Information (20 hours) (Paolo Vitale)
  In this course we apply game theory techniques to the analysis of informational issues in financial markets. The concept of Nash equilibrium under asymmetric information will be presented in the specific context of the activity of rational agents in financial markets. We will see how private information is transmitted through prices, how strategic traders balance the trade-off between information revelation and speculative profits, and how the market structure conditions the price formation process.

March 29–May 6

- Evidence and Methodologies in Empirical Banking (20 hours) (Alberto Franco Pozzolo)

The course presents a critical review of the major contributions of the empirical literature on the role of banks. Topics covered include: the role of financial intermediaries; the characteristics of lender-borrower relationships and the role of soft and hard information; multinational banking and the role of distance; credit risk transfer; the recent financial crisis. Particular emphasis will be devoted to the discussion of the econometric techniques used in the empirical analysis.

- Banking (20 hours) (Giancarlo Spagnolo)
  Theories of financial intermediation. Competition, reputation and the regulation of financial and information intermediaries. The regulatory debate after the financial crisis.

Macroeconomics (coordinator: Pierpaolo Benigno)

The Macroeconomics field is organized in two sub-fields: Macro Theory and Monetary Economics. After a joint review course, the two sub-fields develop in a parallel way across the Fall and Spring terms.

The Monetary sub-field focuses on modern theories of money, the role of monetary policy in models with and without price rigidities and under different price-adjustment mechanisms or information constraints. DSGE models are analyzed both from a theoretical and an empirical perspective.

The Macro Theory sub-field consists of only one course for the next year centered on policy analysis where optimal–taxation problems are analyzed as well as a recent literature addressing macro-prudential regulation.

Students are also required to participate in the Macro Reading Group during the Spring term. Special mini courses related to the field might also be taught by visiting professors. Students are encouraged to sit in these classes.

Fall Term

September 21–October 23

- Macroeconomic Review Course (20 hours) (Pierpaolo Benigno)
  Review of consumption theory in deterministic and stochastic environments, and under complete and incomplete markets. Basics of asset pricing. Investment. Real business cycle models.

November 9–December 18

- Monetary Economics: Theory of Money (20 hours) (Francesco Lippi)
  Theory of money in classic models and models with frictions. Money in equilibrium. The optimum quantity of money. Sticky prices and money: individual decisions and aggregate behavior. Money and incomplete markets.

Spring Term

February 8–March 18

- Monetary Economics: Monetary Policy (20 hours) (Luigi Paciello)

The course studies modern theories of optimal monetary policy. Fiscal-Monetary theories of inflation. Monetary policy in the New-Keynesian model.

- Macroeconomic Theory: Heterogenous-Agent Models (20 hours) (Facundo Piguillem)

This course will review in detail the literature on Stochastic Dynamic Programming. We will start studying a canonical recursive problem. We will learn how to show the existence, uniqueness (or not) and main properties of bellman equations. The goal in these lectures is to build a toolbox that allows students to prove analogous results in less standard models. Then we move to Aiyagari-Bewley-Hugget economies and Angeletos' model of un-insured investment risk. We analyze in detail the main characteristic and implications of self-insurance standard model using the martingale convergence theorem and show the existence and uniqueness (or not) of a wealth distribution in general equilibrium. Finally we study how to analyze these models when there is aggregate uncertainty and new versions of it like "HANK".

March 29–May 6

- Monetary Economics: Empirical Macro (20 hours) (Jean-Paul L'Huillier)
Solution of DSGE models. Estimation through VARs. Structural estimation.

Weekly seminars

- Economics (Monday, 5:30-7 pm)
- Econometrics (Thursday, 5:30-7 pm)
- Lunchtime seminar (1-2 pm)

Special Lectures

Fall Term:

- TBA

Spring Term:

- TBA

Summer Lectures and Seminars

Summer lectures and seminars are meant to provide, in a lunch seminar style, a quick overview of recent frontier research in a variety of broad areas. All the lecturers and speakers will be visiting EIEF, and will be available for interaction. A detailed program will be posted later in the year.