MASTER OF SCIENCE IN ECONOMICS

LAUREA MAGISTRALE IN SCIENZE ECONOMICHE

University of Pisa - Sant'Anna School of Advances Studies

Academic Year 2020-2021

http://www.mse.ec.unipi.it

Introduction

The Department of Economics and Management of the University of Pisa and the Institute of Economics of Sant'Anna School of Advanced Studies have developed a challenging two-year Master of Science Program in Economics.

The Master Program provides students with an advanced training in economics supported by the complementary quantitative and statistical tools. The main aim of the program is to enhance the abilities of students of analysing economic phenomena at different levels: firm, industry, national and international. This range of skills represents the ideal foundation for the development of professionals able to interpret the fast-changing economic environments of the 21st century.

This two-year degree is designed for students aiming at knowledge intensive careers in dynamic firms and corporations, consultancies and public organizations. It offers a solid foundation for those willing to pursue an academic career in the field of economics or other professional activities characterized by a strong research content.

The Faculty of the program has attained an outstanding international reputation for research excellence in many areas of economics. The Master degree (Laurea Magistrale) is jointly awarded by University of Pisa and Sant'Anna School of Advanced Studies

Scheme of MSE courses

FIRST YEAR (60 ECTS)

Advanced Econometrics (9 ECTS)

Advanced Macroeconomics (12 ECTS)

Advanced Microeconomics (12 ECTS)

Advanced Statistics (9 ECTS)

Curriculum General Economics (GE)

Mathematical Methods for Economics (12 ECTS)

European Economic Law (6 ECTS)

SECOND YEAR (60 ECTS)

Student's choice for a total of 12 ECTS:

Economics of Management and Innovation (6 ECTS)
Corporate Finance (6 ECTS)

Student's choice for a total of 24 ECTS:

Analysis of Survey Data and Small Area Estimation (6 ECTS)
Computational Economics (6 ECTS)
Economic Methodology (6 ECTS)
Economic Growth in History (9 ECTS)
European Local Indicators of Poverty and Sustainable Development Goal and Seminars* (9 ECTS)
European Statistical System and Data Production Model* (6 ECTS)
Financial Economics (9 ECTS)
Globalization and Economic Development (6 ECTS)
History of Economic Thought (6 ETCS)
Industrial Economics (6 ECTS)
Labour Economics in an European Perspectives (6 ECTS)
Mathematical Methods for Financial Markets (6 ECTS)
Small Area Methods for the Analysis of Multidimensional Poverty Data and Seminars (9 ECTS)
Survey Methods: Traditional and New Techniques in Official Statistic (6 ECTS)
The Economics of European Regions: Theory, Empirics, and Policy (9 ECTS)
The Economics of the European Union (6 ECTS)
Time Series Econometrics (6 ECTS)

Student's free choice (9 ECTS)

Final dissertation (15 ECTS)

Curriculum in Official Statistics (OS)

Official Statistics (Internship) (12 ECTS)

European Economic Law (6 ECTS)

SECOND YEAR (60 ECTS)

Student's choice for a total of 12 ECTS:

Economics of Management and Innovation (6 ECTS)
Corporate Finance (6 ECTS)

European Statistical System and Data Production Model* (6 ECTS)

Survey Methods: Traditional and New Techniques in Official Statistic (6 ECTS)

Student's choice for a total of 6 ECTS:

Analysis of Survey Data and Small Area Estimation (6 ECTS)
Time Series Econometrics (6 ECTS)

Final dissertation in Official Statistics (30 ECTS)

***European Statistical System and Data Production Model** is borrowed on European Local Indicators of Poverty and Sustainable Development Goal and Seminars

LIST OF COURSES

First year

Second year

FIRST YEAR

FIRST YEAR

Advanced Econometrics

Lecturer	**RAGUSA Giuseppe, PARENTI Angela**
Semester	Spring
ECTS	9

Description

The objective of the course is to provide students with a thorough coverage of the classical econometric theory and with the computational tools to be used in the empirical analyses. The program varies with the students background, but generally includes the following topics: the classical regression model, relaxing the assumptions of the classical model, time series econometrics and simultaneous equation models.

Course outline

1. Interpolation with Ordinary Least Squares Method (OLS)
2. Simple and K-variables Linear Regression Model
   Basic assumptions, OLS estimation.
   Algebraic Properties of the estimates, Statistical Properties of the estimates, the Gauss-Markov theorem,
   The Coefficient of determination Unbiased estimation of .
   The normality assumption, distributions of quadratic forms..
   Independence between quadratic forms, independence between a quadratic form and a linear form.,
   test-t, test-F, alternative forms of the test-F, test of hypothesis (linear restrictions). Regression and forecasting.
3. Further results on the regression model:
   Restricted Least Squares , structural changes,
   Dichotomous variables (dummy variables), multicollinearity.
4. Generalized Least Squares (GLS)
   Non spherical disturbances and OLS estimates , Generalized Least Squares (GLS)..
   Equivalence between GLS and OLS on transformed variables.
   Heteroschedasticity.
   Autocorrelation.
5. Rudiments of asymptotic theory:
   Convergence in probability and convergence in distribution.
   OLS estimation of dynamic models: the instrumental variables method (IV).
   Delta-Method
6. Introduction to linear simultaneous equations models:
   Structural form and reduced form, simultaneous equations models and inconsistency of OLS estimation.
   The identification problem.
   Single equation estimation methods in simultaneous equations models:
   Indirect Least Squares,

	Two Stage Least Squares (TSLS), Instrumental Variables. 7. Nonlinear Least Squares, ML estimation in linear and nonlinear models
Textbooks	Bianchi, C. Lecture Notes Cappuccio, N. Orsi R.: Econometria, Bologna, Il Mulino, 2005. Favero, C.: Applied Macroeconometrics. Oxford, Oxford University Press, 2001. Greene, W.: Econometric Analysis. New York, Macmillan Publishing Company, 1991.. Gujarati, D.: Basic Econometrics. fourth edition, New York, McGraw-Hill, 2003. Johnston, J.: Econometrica, III edizione. Milano, Franco Angeli, 1993. Marcellino, M.:Econometria Applicata Un'introduzione, EGEA, Milano, 2006. Stock, J.H. M.W. Watson: Introduzione all'Econometria, ed. it a cura di F. Peracchi, Pearson, Milano, 2005. Thomas, R.L: Modern Econometrics: An Introduction. Harlow, Addison-Wesley, 1997. Verbeek, M.:Econometria, Zanichelli, Bologna, 2006.
Optional reading	TBA
Prerequisites	TBA
Keywords	TBA
Teaching	TBA
Final valutation	TBA
Course website	TBA
Other notes	Attendance to the lectures is strongly suggested.

Advanced Macroeconomics

Lecturer	**FIASCHI Davide, LAMPERTI Francesco, ROVENTINI Andrea**
Semester	Spring
ECTS	12

Description

This course aims at covering the most important topics in modern macroeconomics.
The first half of course presents the theories of consumption, investment and economic growth. The focus will be on the microfoundations of modern research and on the advanced analytical tools needed for carrying out dynamic analysis, both in continuous and discrete time. All theories will be discussed in light of empirical evidence.
The second half course is designed to introduce the student to the analysis of economic fluctuations, considering the implications of the different theories on macroeconomic policies. Particular attention is devoted to examine how sluggish adjustment of nominal prices and wages can have real effects in face of anticipated or unanticipated monetary and real changes. The microfoundations of prices and wages nominal rigidity are carefully considered. The macroeconomic role of imperfect competition in determining macroeconomic second best equilibrium is carefully examined.

Course outline

1. Theories of economic growth
2. Overlapping generation models
3. Models of dynamic consumption and investment
4. Real-business-cycle theory
5. Keynesian theories of fluctuations
6. Labour market models

Textbooks

Romer, David. Advanced Macroeconomics. McGraw Hill, 2006 (Selected chapters)
Olivier J. Blanchard and S. Fischer, Lectures in Macroeconomics, M.I.T. Press, 1989 (Selected chapters)
Carlin W. and Soskice D., Macroeconomics. Imperfections, Institutions, and Policies, Oxford University Press, 2006 (Selected chapters)
Bagliano, F.C. e Bertola, G. (2006): "Models for Dynamic Macroeconomics", Oxford Economic Press, chapters 1, 2.
Some lecture notes will be provided.

Optional reading

See courses' website

Prerequisites

Elements of calculus, of difference and differential equations, and of static and dynamic optimization.

Keywords

TBA

FIRST YEAR

Teaching	Lectures
Final valuation	Written examination and homework
Course website	TBA
Other notes	Attendance to the lectures is strongly suggested.

Advanced Microeconomics

Lecturer	**SCAPPARONE Paolo, SALVADORI Neri, PACINI Pier Mario**
Semester	Spring
ECTS	12
Description	Students are expected to acquire: - the tools and concepts to understand and represent individual behaviour both as consumption units, investors and firms, in certain, uncertain and strategic environments. - the tools and concepts to understand and represent the working of single markets, in conditions of perfect and imperfect competition and the basic tools for intervention and regulation. - the tools and concepts to understand and interpret the working of the whole economy, its properties and limitations - ability to solve problems concerning individual and market behaviour. - critical and selective capacity to apply the above tools to analyze, interpret and represent real phenomena from the microeconomic point of view. - ability to autonomously read and understand advanced textbooks and academic articles at the frontier of economic literature in the field of microeconomics.
Course outline	1. Neoclassical consumer theory - Duality - Revealed preferences 2. Aggregation theory 3. Choices under uncertainty 4. Production theory - short and long run 5. Strategic decisions and game theory 6. Imperfectly competitive markets 7. Perfectly competitive markets - short and long run *8.* General equilibrium theory
Textbooks	William Greene, *Econometric Analysis*, Prentice Hall International Edition.
Optional reading	Jehle and Reny (2011), Advanced Microeconomic Theory. 3rd Ed. Prentice Hall. Mas-Colell, Whinston, and Green (1995), Microeconomic Theory, OUP. Varian (1992), Microeconomic Analysis 3rd ed., Norton
Prerequisites	TBA
Teaching	Lectures and Task-based learning/problem-based learning/inquiry-based learning
Final valuation	Final written exam + oral exam
Course website	TBA
Other notes	TBA

Advanced Statistics

Lecturer	**MANFREDI Piero, GIUSTI Caterina**
Semester	Fall
ECTS	9

Description	The course develops the basics of probability distributions theory, their treatment and use as probability models, and an overview of likelihood based inference.
Course outline	1. Random variables and their characterization. Distribution functions and expectations. Moment generating and other auxiliary function. 2. Main discrete and continuous distributions. 3. Functions of random variables. 4. Elementary probability modelling. Hazard processes 5. Asymptotics. Central limit theorem, law of large numbers. 6. Sampling. Estimation. Likelihood-base inference. Point estimators. Computing maximum likelihood estimators under various circumstances. Censoring. Properties of point estimators. 7. Confidence intervals. Likelihood based (profile) vs pivotal approaches. 8. Test of hypotheses. 9 Goodness of fit. BIC. Likelihood ratio test 10. A short overview of Bayesian inference. 11. Basic bootstrapping.
Textbooks	Most topics can be found on: Mood AM, Graybill, Boes D (first ed 1981), Introduction to the theory of statistics, Mc Graw Hill (some editions are free online).
Optional reading	TBA
Prerequisites	Basic calculus including elementary integration theory. Basic probability (in particular Ch.1 of the course textbook). Electronic sheet. Basic statistics (including inference).
Keywords	TBA
Teaching	Slides of each teaching unit (usually lasting 2/3 lectures) are made available a few days after the completion of the corresponding unit. Exercises and assignments are an integral part of the course and are planned in order to set in practice the concepts developed during the lectures in a gradual way, so to follow smoothly the development of the various subjects.
Final valuation	Written exam, with theoretical and applied questions drawn (only) from materials developed during the course
Course website	TBA
Other Notes	TBA

FIRST YEAR

Mathematical Methods for Economics

Lecturer **SODINI Mauro, CAROSI Laura**

Semester Fall

ECTS 12

Description The course aims to give a solid background in mathematics for economic studies. Particular attention will be given to economic applications.

Course outline

Part I. Topology, Fixed point theorem and separation

- The Euclidean spaces. Sequences in R and in Rn.
- Metric spaces: sequences, compactness, completeness. Fixed point theorem.
- Continuous functions on metric spaces. Continuous functions on compact sets.
- Correspondence and fixed point theorems.
- Convex sets and separation theorems

Part II – Linear Algebra

- Vector spaces. Matrices. Determinant of a matrix.
- Eigenvector and eigenvalues.
- Diagonalization of a matrix. Canonical forms.
- Linear Functions. Linear Functions and Matrices.

Part III Topics on Multivariable Calculus

- Gradients and Directional Derivatives.
- Differentiability and differential of a function.
- Taylor's formula.
- Euler's Theorem.

Part IV - Static optimization

- Implicit function theorem: applications.
- Unconstrained optimization.
- Optimization with equality constraints: Lagrange multipliers method.
- Optimization with inequality constraints: Kuhn-Tucker theorem.
- Generalized Convexity.
- Envelope theorems.

Part V- Dynamical systems

- System of difference equations.
- Systems of differential equations.
- Economic applications.

Part VI - Dynamic optimization

- Review of Reimann Integration.

	Optimality for continuous-time problems: Optimal Control by Maximum Principle with several final conditions. – Optimality for problems in discrete time: Maximum principle and outline of dynamic – programming: Bellman equation and Euler equation.
Textbooks	• S. Liptschutz, M. Lipson, Schaum's *Outline of Linear Algebra*, Fourth Edition, McGraw Hill, • 2009 (Chapters 1-10). • R. Bronson, *Matrix methods*, Second Edition, Academic Press, Boston 1991. Chapters 2,5,7, • 9,10 . • K. Sydsaeter, P. Hammond, A. Seierstad, A. Strom, *Further Mathematics for Economic* • *Analysis*, Second Edition, Prentice Hall, London 2008 (Chapters 2,3,5,6,7,9,10,11,12,13,14) .
Optional reading	➢ Serge Lang, Linear Algebra, Springer 1987 (or Addison Wesley, Reading MA 1971) Chapter ➢ 1-8. ➢ S. Liptschutz, M- Lipson, Schaum's Outline of General Topology, McGraw Hill, 1968 or ➢ later editions. ➢ Munkres, J. R. Topology a first course. Englewood Cliffs, New Jersey [etc.], Prentice- Hall, ➢ Inc., 1975 or later editions. ➢ G. Gandolfo, Economic Dynamics, 4th edition, Springer Verlag (2009). ➢ R. Shone, Economic Dynamics: Phase Diagrams and their Economic Application, ➢ Cambridge University Press, 2003. ➢ C. P: Simon and L. BLume, Mathematics for economists, International student ed., ➢ New York, London : W.W. Norton, c1994, ISBN 978-0-393-11752-3. ➢ Knut Sydsæter, Arne Strøm, Peter Berck, Economists' mathematical manual 4.ed, Berlin, ➢ Springer, 2005 ISBN 3-540-26088-9.
Prerequisites	*Contents* Students are supposed to be familiar with the topics usually taught in basic course on Calculus and Linear Algebra. Knowledge on differential and difference equations is also advised. *Suggested reading* ✓ Antonio Villanacci *Notes for the Math course at the European University Institute* (Free from http://www.eui.eu/Documents/DepartmentsCentres/Economics/Researchandteaching/Courses/mathsyllabusVillanacci2015.pdf). ✓ K. Sydsaeter, P. Hammond, A. Seierstad, A. Strom, *Further Mathematics for Economic Analysis*, Second Edition, Prentice Hall, London 2008 (Appendix B). ✓ Spivak M., *Calculus* 3rd edition, Cambridge University Press, 1994 (Part II and Part III) .
Keywords	Linear Algebra, Metric spaces, Dynamical system, Static and Dynamic Optimization
Teaching	The course is organized on lectures and review sessions. Review sessions will be devoted to the discussion and solutions of exercises.
Final valuation	The exam is written. The student is required to solve exercises and to answer theoretical questions.
Course website	TBA
Other notes	Attendance to the lectures is strongly suggested

FIRST YEAR

European Economic Law

Lecturer	**IERMANO Gabriella**
Semester	Fall
ECTS	6

Description	The course provides a discussion of the main topics in European economic law, among which sources of European law, European corporate law, regulation and legislative competition in Europe, European trademark law, and harmonization among European countries' legislations.
Course outline	Sources of European Law (Prof. Martines) European Corporate Law: Harmonization, Regulation and legislative Competition The European Economic Interest Grouping The Societas Europea The European Cooperative Society The European Private Company proposal Single member private limited liability companies (Proposal for a Directive) The Shareholders Rights Directive Groups of companies Freedom of establishment European Takeover-bids Regulation The Small Business Act for Europe European Merger and Acquisitions Regulation European Financial Markets Regulation European Competition Law European Trade Mark Law European Sales Law
Textbooks	TBA
Optional reading	TBA
Prerequisites	TBA
Keywords	TBA
Teaching	TBA
Final valuation	TBA
Course website	TBA
Other notes	TBA

FIRST YEAR

Official Statistics Internship

ECTS 12

Place	National Statistical Authority (ISTAT)
Description	The objective of the course is to provide students with a thorough coverage of the classical econometric theory and with the computational tools to be used in the empirical analyses. The program varies with the students background, but generally includes the following topics: the classical regression model, relaxing the assumptions of the classical model, time series econometrics and simultaneous equation models.

SECOND YEAR

Analysis of Survey Data and Small Area Estimation

Lecturer	**PRATESI Monica**
Semester	Spring
ECTS	6

Description	The course will be structured in the following parts 1) Analysis of the collected data for estimation and testing for the phenomenon under study; definition of planned and unplanned domains. 2) Direct and indirect estimates for unplanned domains; R codes for the application of the SAE estimators (EURAREA and SAMPLE project libraries) 3) quality issues in SAE and usage of SAE in European Statistical System. At the end of the course student will be able to deal with small area estimation both at the theoretical and empirical level.
Seminars and intensive lectures	TBA
Textbooks	TBA
Final valuation	Written exam.
Course website	http://sampleu.ec.unipi.it/
Other notes	This course is part of a Jean Monnet Chair.

SECOND YEAR

Computational Economics

Lecturer	**FAGIOLO Giorgio, ROVENTINI Andrea**
Semester	Spring
ECTS	6

Description	The objective of the course is to introduce students to complexity approaches to economics. Indeed, economies can be considered as complex, evolving systems where heterogeneous agents interact at the micro and meso levels leading to the emergence of macroeconomic phenomena. The course provides an overview of agent-based computational economics and a presentation of several applications in the domain of financial markets, economic growth and business cycles
Course outline	TBA
Textbooks	Readings will be provided by the lecturers during the course.
Optional readings	TBA
Prerequisites	Students should be familiar with statistics and macroeconomics
Keywords	Complex systems, agent-based computational economics, business cycles
Teaching	Frontal lectures and lectures notes
Final valuation	Oral examination or take-home essay
Course website	TBA
Other notes	Attendance to the lectures is strongly recommended

Corporate Finance

Lecturer	**BARONTINI Roberto**
Semester	Fall
ECTS	6

Description	
Course outline	
Textbooks	
Optional readings	
Prerequisites	
Keywords	
Teaching	
Final valuation	
Course website	
Other notes	

SECOND YEAR

Economics and Management of Innovation

Lecturer	**DOSI Giovanni**
Semester	Spring
ECTS	6

Description

The course introduces the economics of information and the economics of technological innovators, together with their implications in terms of theory of production, theory of the firm and industrial dynamics.

Course outline

1. The economic properties of information. Analogies and differences between information and (technological) knowledge.
2. Technologies as bodies of knowledge, as 'recipes' and as input/output relations.
3. The structure of innovative knowledge: technological paradigms and trajectories.
4. Intersectoral differences in the sources of innovative knowledge and in the innovation process.
5. Patterns of innovation diffusion.
6. Firms as repositories of problem-solving knowledge.
7. Innovation, imitation and industrial competition.
8. The features and drivers of industrial evolution.

Textbooks

Dosi G. and R.R. Nelson (2010), "Technical Change and Industrial Dynamics as Evolutionary Processes", In B.H. Hall and N. Rosenberg: Handbook of the Economics of Innovation - Vol. I, Burlington: Academic Press, pp. 51-128 .

• Dosi G. (1982), "Technological Paradigms and Technological Trajectories. A Suggested Interpretation of the Determinants and Directions of Technical Change", Re- search Policy.

• Pavitt K. (1984), "Patterns of Technical Change: Toward a Taxonomy and a Theory", Research Policy.

• Nelson R., Winter S. (1982), An Evolutionary Theory of Economic Change, Harvard
Univ. Press, Part I-III (ch. 1-7)

• Dosi G., O. Marsili, L. Orsenigo, R. Salvatore (1995), "Learning, Market Selection and The Evolution of Industrial Structures", Small Business Economics, vol. 7, pp.
411-436.

• Dosi G. (2007), "Statistical Regularities in the Evolution of Industries. A Guide through some Evidence and Challenges for the Theory", in F. Malerba and S. Brusoni (eds.) Perspectives on Innovation, Cambridge, Cambridge University Press.

Optional reading

• Freeman, C. (1982), The economics of industrial innovation, 2nd ed., Pinter:

	London • Rosenberg, N. (1982), Inside the Blackbox, Cambridge University Press: Cambridge/New York
Prerequisites	Good knowledge of the standard theory of production. Basics of growth theory.
Keywords	Information, economics of innovation, technological paradigms, industrial evolution
Teaching	TBA
Final valuation	Oral exam
Course website	TBA

Economic of Growth in History

Lecturer	**NUVOLARI Alessandro**
Semester	Fall
ECTS	9

Description	This course examines how the world economy got to be where it is today. In particular, the course will focus on the divergence between rich and poor countries, provide an assessment of the factors explaining the success of rich countries and the obstacles hindering growth in poor countries. In this respect, the course will examine the role played both by "proximate" and "ultimate" sources of economic growth. The former refers to direct determinants of economic performance such as capital, labour and technical progress, while the latter refers to "deep" casual factors with long term historical roots such as geography, culture and institutions. Finally, special attention will be devoted to quantitative assessments of long term trends in living standards and in economic performance across the world economy.
Course outline	1. Economic growth and living standards in the very long run (10000 BC -2011 AD) 2. The Malthusian trap and the long term stagnation in living standards 3. The foundations of European "exceptionalism" 4. The long term dynamics of economic globalization 5. The great divergence: when and why the West grow rich 6. The industrial revolution and the take-off towards "modern economic growth" 7. The productivity race: convergence and divergence in the world economic since the industrial revolution
Textbooks	Allen, R.C. (2011), Global Economic History. A Very Short Introduction, Oxford: Oxford University Press. A number of papers and readings that will be announced at the beginning of the Course
Optional readings	Karl Gunnar Persson and Paul Sharpe (2015), *An Economic History of Europe,* Cambridge, Cambridge University Press.
Prerequisites	Students must be familiar with the standard tool of microeconomics, macroeconomics and econometrics at Master Level. Some working knowledge of modern models of economic growth is recommended. Finally, it would be useful to have a preliminary background in economic history.
Keywords	Economic History, Economic Growth, Globalization, Industrial Revolution, Catching-up, Growth Accounting
Teaching	Lectures/Seminars
Final valuation	Written examination
Course website	TBA

Other notes	Wide reading and deep thinking are strongly recommended

SECOND YEAR

European Local Indicators of Poverty and Sustainable Development Goal and Seminars

Lecturer	**PRATESI Monica**
Semester	Fall
ECTS	9 (6 European Statistical System and Data Production Model + 3 Poverty and Living Conditions Indicators)

Description	The course aims to provide definition and measure of local indicators that be coherent and comparable across Europe and be useful and used by local stakeholders. It provides knowledge on the traditional data collections methods used in EU Surveys (e.g EU-Survey Income Living Conditions, Household Budget Surveys, Labour Force Survey) and a general introduction to the usage of administrative data sets and also large datasets as sources of statistical data (Big Data), with a focus on multi-frame surveys. It will tackle the most important topics in big data ranging from data collection, analysis and visualization, as well as applications of statistical models to Big data. At the end of the module student should be able to be confident with the theme of local indicators and Big Data in Official and should know the main problems/challenges linked to their usage as source of statistical data. Students will learn traditional and new survey techniques and what might be the problems that arise in the definition and measure of local indicators of poverty and living conditions.
Seminars and intensive lectures	Natalie Shlomo: "Handling missing data, statistical data editing and imputation" Luigi Biggeri: "The estimation and computation of income, consumption and PPPs in the European statistical system" Daniela Ghio: "ESS: structure and organization", "ESS: Data collection, the link between national level and EU context", "ESS: SDMX – Data, metadata and exchange system; the code of practice and degree of harmonisation at EU level"
Textbooks	Readings will be provided by the lecturers during the course.
Final valuation	Written exam. Students can take the exam for the entire course, "Analysis of European data by small area methods" (9 ECTS), or for the course "European statistical system and data production model" (6 ECTS) with reduced program.
Course website	http://sampleu.ec.unipi.it/
Other notes	This course is part of a Jean Monnet Chair. Attendance to the lectures is strongly suggested. Wide reading and deep thinking are strongly recommended.

SECOND YEAR

Economic Methodology

Lecturer	**MONETA Alessio, GUARNIERI Pietro**
Semester	Spring
ECTS	6

Description	
Course outline	
Textbooks	
Optional readings	
Prerequisites	
Keywords	
Teaching	
Final valuation	
Course website	
Other notes	

SECOND YEAR

European Statistical System and Data Production Model

Lecturer	**PRATESI Monica**
Semester	Fall
ECTS	6

Description	The course aims to provide definition and measure of local indicators that be coherent and comparable across Europe and be useful and used by local stakeholders. It provides knowledge on the traditional data collections methods used in EU Surveys (e.g EU-Survey Income Living Conditions, Household Budget Surveys, Labour Force Survey) and a general introduction to the usage of administrative data sets and also large datasets as sources of statistical data (Big Data), with a focus on multi-frame surveys. It will tackle the most important topics in big data ranging from data collection, analysis and visualization, as well as applications of statistical models to Big data. At the end of the module student should be able to be confident with the theme of local indicators and Big Data in Official and should know the main problems/challenges linked to their usage as source of statistical data. Students will learn traditional and new survey techniques and what might be the problems that arise in the definition and measure of local indicators of poverty and living conditions.
Seminars and intensive lectures	Natalie Shlomo: "Handling missing data, statistical data editing and imputation" Luigi Biggeri: "The estimation and computation of income, consumption and PPPs in the European statistical system" Daniela Ghio: "ESS: structure and organization", "ESS: Data collection, the link between national level and EU context", "ESS: SDMX – Data, metadata and exchange system; the code of practice and degree of harmonisation at EU level"
Textbooks	Readings will be provided by the lecturers during the course.
Final valuation	Written exam. Students can take the exam for the entire course, "Analysis of European data by small area methods" (9 ECTS), or for the course "European statistical system and data production model" (6 ECTS) with reduced program.
Course website	http://sampleu.ec.unipi.it/
Other notes	This course is part of a Jean Monnet Chair. Attendance to the lectures is strongly suggested. Wide reading and deep thinking are strongly recommended.

SECOND YEAR

Financial Economics

Lecturer	**BOTTAZZI Giulio . GIACHINI Daniele**
Semester	Spring
ECTS	9

Description	The aim of the course is to provide an intermediate treatment of the theory of speculative markets. After a review of decision theory under uncertainty, the notion of arbitrage and equilibrium price are introduced and developed for different market set- tings. The problem of portfolio optimization and mean-variance analysis is discussed in a rather general framework. The course concludes with a short introduction to behavioral and evolutionary finance (depending on the remaining time).
Course outline	1. choices under uncertainty: expected utility theory, risk aversion 2. equilibrium and arbitrage: state prices, complete and incomplete markets, arbitrage and portfolio choices 3. optimal portfolio: multiple risky assets; equilibrium prices; mean-variance analysis 4. OPTIONAL: behavioral finance: asset prices under ambiguity, evolutionary finance: the market selection hypothesis
Textbooks	✓ Principles of Financial Economics, S. F. Le Roy and J. Werner
Optional reading	TBA
Prerequisites	The course requires a basic knowledge of linear algebra (linear space, linear map, basis, inversion, eigenvectors and eigensystems), probability theory (probability distribution, joint and conditional probability, expectation, variance) and static optimization (Lagrange and Kuhn-Tukker conditions). Previous knowledge of consumer theory and economic equilibrium can be useful, as well as basic notions of topology (in the first part of the course). *Suggested reading* • C. P. Simon, L. E. Blume, Mathematics for Economists. • H. R. Varian Microeconomic Analysis.
Keywords	Financial economics, arbitrage, asset pricing, portfolio optimization
Teaching	Lectures
Final valuation	Written examination
Course website	TBA
Other notes	TBA

SECOND YEAR

Globalization and Economic Development

Lecturer	**D'ALESSANDRO Simone, DELLA POSTA Pompeo**
Semester	Spring
ECTS	6

Description	The course aims to enable students to understand and critically analyse the essential aspects of the current phase of globalization both in its real and monetary aspects, that is related to trade and trade policies and to the role of exchange rates and the liberalization of foreign exchange respectively. In this context, the course focuses on the emergence and the role of international institutions in the regulation of economic relationship between countries. The second part of the course analyses the effects of globalization on economic development, with particular reference to the institutional dynamics and the distributive and environmental conflicts.
Course outline	1. History of economic globalization and international economic institutions 2. Economic globalization on the real side 3. Economic globalization on the monetary side 4. Institutional change analysis 5. Distributive conflicts and the persistence of inefficient institutions 6. Collective action and cooperation
Textbooks	Notes provided by the lecturer and reading list to be provided
Optional reading	TBA
Prerequisites	Students should be familiar with standard intermediate textbook of Macroeconomics and Microeconomics
Keywords	Globalization, Institutions, Conflicts and Development
Teaching	Frontal lectures, homework,
Final valuation	Written examination
Course website	TBA
Other notes	Attendance to the lectures is strongly suggested, further details will be available at the course website

SECOND YEAR

History of Economic Thought

Lecturer	**BIENTINESI Fabrizio**
Semester	Spring
ECTS	6

Description	The course focuses on the development of monetary theories during the XX century, through the readings of original texts. The first part of the course is dedicated to John Maynard Keynes, starting from the *Treatise on Money* and following with the *General Theory* and his project of "International Clearing Union". Successively, will be analysed Milton Friedman's contributions and the revival of "quantitative theory" and the strong criticism proposed by Kaldor. A key and final role in the course will be played by Minsky's hypothesis on structural financial instability and Mandelbrot's criticism of standard financial theory.
Seminars and intensive lectures	TBA
Textbooks	Readings will be provided by the lecturers during the course.
Final valuation	TBA
Course website	TBA
Other notes	TBA

SECOND YEAR

Industrial Economics

Lecturer	**TAMAGNI Federico**
Semester	Spring
ECTS	6

Description	TBA
Course outline	TBA
Textbooks	TBA
Optional reading	TBA
Prerequisites	TBA
Keywords	TBA
Teaching	Frontal lectures, lectures notes
Final valuation	Written examination
Course website	TBA
Other notes	Attendance to the lectures is strongly suggested

SECOND YEAR

Labour Economics in an European Perspective

Lecturer	**CORSINI Lorenzo. MECCHERI Nicola, FIASCHI Davide, BRUNETTI Irene**
Semester	Fall
ECTS	6

Description	The course aims to provide to students a solid background and tools in theoretical and empirical labour economics. These tools will be then applied to understand the working of labour markets and labour institutions across European countries and at the central European level. Some aspects that are particularly relevant for European union will receive great emphasis: active and passive labour polices; workers mobility and migration; productivity, income and social exclusion; industrial relations and their consequences on workers and on the production sector. Finally, an overview of empirical issues related to labour markets will be covered and the most relevant estimation techniques will be presented. The course is organized so that the course coordinator will cover the basic and fundamental issues in labour economics and then the specific topics will be covered by experts in the fields
Course outline	1. The classical theory of labour markets: labour supply and demand; wage and employment. 2. Job search theory at the micro and macro level. 3. Labour institutions: introduction to union bargaining, minimum wage, employment protection, unemployment insurance, active labour policies. 4. EU labour policies and the integration of EU labour markets: current state and future perspective. 5. Employment Relations in the EU. 6. Wage Bargaining and Product Market Outcomes. 7. Empirical Labour Economics: statistical methods for the evaluation of impact of labour policies. 8. Labour Mobility in the EU. 9. European Policies, productivity and inequality.
Textbooks	Notes delivered during lectures.
Optional reading	Cahuc, Carcillo and Zylberg, Labor Economics, 2nd Ed., 2014, Cambridge: MIT Press.
Prerequisites	Contents Students should be familiar with microeconomics and with intermediate level econometrics. Suggested reading A standard intermediate textbook of Microeconomics and of Econometrics
Keywords	Es. Labour Market, Employment, Unemployment, Wage, European Union, Labour Policies, Unions, Policy Evaluation, Inequality, Mobility.

SECOND YEAR

	Human capital, Endogenous technological progress, environment
Teaching	Frontal lectures, lectures notes, seminar from external guests.
Final valuation	Written examination
Course website	TBA
Other notes	This course is part of a Jean Monnet Chair. Attendance to the lectures is strongly suggested.

SECOND YEAR

Mathematical Methods for Financial Markets

Lecturer	**RADI Davide**
Semester	Spring
ECTS	6

Description

The course has the aim of introducing the students to the basic issues of quantitative finance and methodologies for pricing and hedging derivatives are analyzed in some details, both with theoretical and numerical methods.

Course outline

1. 1. Basic concepts of measure theory and probability theory. Brownian motion and stochastic calculus. Martingale theory. Stochastic differential equations and Feynman-Kac representation formulas.
2. Introduction to financial terminology: markets and money, buying and selling options, European and American derivatives, non arbitrage and hedging.
3. Discrete market models: binomial models, pricing call and put options.
4. Relationship between non-arbitrage and martingales. Risk neutral measures. Fundamental theorem of asset pricing
5. Continuous market models: Black-Scholes-Merton model. Dynamic hedging and pricing options.
6. Numerical and analytical methods for pricing using Matlab: Montecarlo methods, PDE methods, Laplace and Fourier methods.
7. Pricing interest rate derivatives: Vasicek and CIR Models.
8. Levy processes and stochastic calculus for Jump processes.
9. Pricing credit risk derivatives: structural models, reduced-form models, hybrid models.
10. Empirical evidences and calibration procedures.

Textbooks

1. Paul Wilmott introduces Quantitative Finance; Paul Wilmott; WWW.Wilmott.com
2. PDE and Martingale Methods in Option Pricing; Andrea Pascucci, Springer.

Optional reading

Stochastic differential equations; Bertn Oksendal, Springer.

Teaching

Frontal lectures, lectures notes, seminar from external guests.

Final valuation

Oral exam on the theoretical aspects introduced into the course

Other notes

Attendance to the lectures is strongly suggested.

SECOND YEAR

Small Area Methods for the Analysis of Multidimensional Poverty Data and Seminars

Lecturer	PRATESI Monica
Semester	Spring
ECTS	9

Description	The course offers a review of the main Small Area Estimation Methods and teach how to apply them to European survey data to have a local monitoring of the Sustainable Development Goals and to estimate deprivation and inequality indicators, focusing also in aggregating Multidimensional Indicators and on conceptualizing, defining and measuring poverty under the capability approach. The course will be structured in the following parts 1) Analysis of the collected data for estimation and testing for the phenomenon under study; definition of planned and unplanned domains. 2) Direct and indirect estimates for unplanned domains; R codes for the application of the SAE estimators (EURAREA and SAMPLE project libraries) 3) quality issues in SAE and usage of SAE in European Statistical System. At the end of the module student will be able to deal with small area estimation both at the theoretical and empirical level and to apply aggregation methods to indicators from the European survey data. Students will learn the fundamental small area methods and what might be the problems that arise in the application of them and in the definition of their statistical quality.
Seminars and intensive lectures	Nikos Tzavidis: "Poverty mapping to study income and cultural diversity in Europe" Vincenzo Mauro: "Aggregating Multidimensional Indicators in Europe" Mario Biggeri: "Vulnerable groups: child poverty, migration and gender in Europe"
Textbooks	Readings will be provided by the lecturers during the course.
Optional readings	
Prerequisites	
Keywords	
Teaching	
Final valuation	Written exam. Students can take the exam for the entire course, "Small Area methods for the analysis of multidimensional poverty data and seminars" (9 ECTS), or for the courses "Analysis of Survey Data and Small Area Estimation" (6 ECTS) with reduced program.

SECOND YEAR

Course website	sampieuchair.ec.unipi.it
Other notes	This course is part of a Jean Monnet Chair.

SECOND YEAR

Survey Methods: Traditional and New Techniques in Official Statistics

Lecturer	**PRATESI Monica, FAUSTINI Luca, PORCIANI Linda, VARRIALE Roberta**
Semester	Spring
ECTS	6

Description	The course is structured into two modules. The first module (3 ECTS) is on traditional data collection methods: 1) Sampling theory: topics include the main sampling designs, as random sampling with clustering and stratification. 2) Estimation: major issues in weighting and use of auxiliary variables in the estimation: ratio and regression estimators) and Survey error profile (coverage, nonresponse and measurement error). The students who successfully complete the first module will be aware of the basic terms and concepts of the field of survey sampling, will be able to estimate target parameters under the basic sampling designs; they will be able to distinguish the sampling and non sampling components of the error profile. The second module (3ECTS) aims to provide a general introduction to the usage of administrative data sets and also large datasets as sources of statistical data (Big Data), with a focus on multiframe surveys. It will tackle the most important topics in big data ranging from data collection, analysis and visualization, as well as applications of statistical models to Big data. At the end of the module student should be able to be confident with the theme of Big Data in Official and should know the main problems/challenges linked to their usage as source of statistical data.
Course outline	TBA
Textbooks	TBA
Optional reading	TBA
Prerequisites	TBA
Keywords	TBA
Teaching	TBA
Final valuation	TBA
Course website	TBA
Other notes	TBA

SECOND YEAR

The Economics of European Regions: Theory, Empirics, and Policy and Management of Innovation

Lecturer	**FIASCHI Davide, PARENTI Angela**
Semester	Fall
ECTS	9

Description	The module introduces to some of the most current key issues of European Union (EU) both from a theoretical and applied perspective. In particular, it will analyse the growth and convergence/divergence among European regional economies, the design and the effectiveness of European Regional Policy, the coordination, and competition of fiscal policies, and finally, the effect of internal and external migration.
Course outline	The course covers four main parts. In the first parts we will revise the theoretical models for the analysis of growth and con(di)vergence among European regions. We will present evidence on the dynamics of main aggregate variables by advanced parametric and nonparametric techniques. We will deepen the roots of the EU disparities through spatial econometrics models. In the second part we will illustrate the evolution of EU Regional Policy and how is financed through the EU budget. Special attention will be payed to European Structural Funds as support to regional growth and competitiveness. Finally, we will discuss the problems arising in the quantitative evaluation of regional policy. In the third part, we will explore the economic background of taxation in EU in terms of both national and EU policy, distinguishing different types of taxes, taxation system, and their implications in terms of labour mobility, spatial location of activities, and household residential decisions. In the final part, we will focus on the analysis of the geographical mobility within and across EU countries and its potential for reducing regional disparities.
Textbooks	Notes delivered during lectures.
Optional reading	Combes, Mayer, and Thisse (2008), Economic Geography: The Integration of Regions and Nations. Baldwin and Wyplosz (2015). The Economics of European Integration.
Prerequisites	Students should be familiar with macroeconomics and with intermediate level econometrics. Suggested reading to fill possible gap in prerequisites: standard introductive textbooks of Macroeconomics and of Econometrics
Keywords	European regional Policy, European regions, nonparametric methods, taxation in EU, European Structural Funds, Migration, Capital Mobility, EU disparities.

Teaching	Frontal lectures, lectures notes, seminar from external guests.
Final valuation	Homework and oral expositions
Course website	https://eer.ec.unipi.it/
Other notes	This course is part of a Jean Monnet Chair. Attendance to the lectures is strongly suggested

SECOND YEAR

The Economics of the European Union

Lecturer	**DELLA POSTA Pompeo, PIEROBON Federico, CORSINI Lorenzo, PARTHA Sen**
Semester	Spring
ECTS	6

Description	1. A short history of the process of European integration and some basic elements on the institutions of the European Union. 2. Theoretical justification for free trade in Europe. The microeconomics of integration. 3. The Single European Market 4. The European Economic and Monetary Union
Course outline	Historical overview of the economic and monetary integration process in Western Europe: from the end of World War II to the recent Eastern enlargement. 2a. The theory of trade and EU. Inter-industry trade: Smith, Ricardo and the principle of absolute and comparative advantage; the neoclassical interpretation and the Hecksher-Ohlin model. Intra-industry trade and the process of European integration: the role played by increasing returns to scale and imperfect competition. 2b. The microeconomics of integration: the costs and benefits of integration (also applicable to the NAFTA - North American Free Trade Association). 3. The Single Market: the process of economic integration in the EU. 4a. The theory of economic and monetary union: the theory of optimum currency areas 4b. The process of monetary integration in Europe: from the European Monetary System (EMS) to the European Economic and Monetary Union (EMU).
Textbooks	Senior Nello, Susan M. (2011), *The European Union: Economics, Policies, and History 3/E*, McGraw Hill, Maidenhead, UK; Baldwin, Richard and Charles Wyplosz (2006), *The Economics of European Integration 2/E*, McGraw Hill, Maidenhead, UK
Optional reading	TBA
Prerequisites	TBA
Keywords	TBA
Teaching	TBA
Final valuation	TBA
Course website	TBA
Other notes	TBA

SECOND YEAR

Time Series Econometrics

Lecturer	**RAGUSA Giuseppe**
Semester	Spring
ECTS	6

Description

This course introduces to the time series methods and practices which are most relevant to the analysis of economic and financial time series. We will cover univariate and multivariate models of stationary and non-stationary time series in the time domain. The goals of the course are twofold: first to develop a comprehensive set of tools and techniques for analysing various forms of univariate and multivariate time series, and second to acquire knowledge of recent changes in the methodology of econometric analysis of time series.

Course outline

UNIVARIATE TIME SERIES MODELS
- Moving Average (MA) models
- Autoregressive (AR) models
- Autoregressive Moving Average (ARMA) models
- Choosing a model: the autocorrelation function and the partial autocorrelation function
- Choosing a model: specification tests and model selection criteria
- Stationarity and unit roots
- Testing for unit roots
- Estimation of ARMA models
- Predicting with ARMA models
- Autoregressive conditional heteroskedasticity (ARCH, GARCH and EGARCH).
- Estimation and prediction

MULTIVARIATE TIME SERIES MODELS
Dynamic models with stationary variables (ADL model, Adaptive expectations, Partial adjustment)
Models with nonstationary variables
- Spurious regressions
- Cointegration
- Cointegration and error-correction mechanisms

Vector autoregressive models
Cointegration: the multivariate case
- Cointegretion in a VAR
- Testing for cointegration

Illustration: the expectations theory of the term structure, volatility in daily exchange rates, long-run purchasing power parity, money demand and inflation.

	We will show how to use time series tools in applications using software such as PcGive, Gretl and E-Views.
Textbooks	Lecture notes (available on E-learning); Verbeek M. (2008), *A Guide to Modern Econometrics*, John Wiley and Sons (Third Edition). Juselius, K., *The Cointegrated VAR Model, Methodology and Applications*. Oxford University Press, 2007.
Optional reading	Hamilton James D., *Time Series Analysis*. Princeton University Press, 1994.
Prerequisites	*Contents* : Students are assumed to have had a previous course in *Econometrics*. A good grasp of basic mathematical statistics and linear algebra is necessary. *Suggested reading* : The mathematical appendix in Hamilton gives a summary of useful mathematical and statistical tools.
Keywords	Stochastic process, ARMA model , ARCH model, VAR model, stationarity, non stationarity, cointegration.
Teaching	Frontal lectures, homework, lectures notes
Final valuation	Written examination
Course website	TBA
Other notes	Attendance to the lectures is suggested