Master degree in Economics and Data Analysis for Industry and Policy (MEDIP)

(a short guide)

Course overview

Study plan for students enrolled in the 1st year (academic year 2026/2027)

Courses / Teaching Components

UNIVERSITÀ DI PAVIA
Dipartimento di Scienze Economiche e Aziendali

Dipartimento di Eccellenza MUR 2023-2027

UNIVERSITÀ DI PAVIA

Course Overview

The Master's Degree in Economics and Data analysis for Industry and Policy (MEDIP) is a two-year programme entirely taught in English. It is designed for students with a bachelor's degree (or equivalent qualification), in Economics (preferably) or related fields. MEDIP builds on the Department's strong research tradition, combining advanced expertise in economics, econometrics, and data analysis with an applied and interdisciplinary approach that bridges macro- and microeconomics, business dynamics, and legal studies.

The first year offers a common pathway designed to provide students with strong quantitative and methodological skills. In the second year, students are asked to choose one of two specialization tracks: 1) an "Industry track", focused on innovation, digital markets, and competition; 2) a "Policy track", dedicated to evidence-based analysis and evaluation of public policies.

The Industry track trains professionals to analyse markets and industrial dynamics, with a focus on innovation, digitization, and competition. It is designed for graduates who want to find employment in multinational companies, SMEs, regulatory authorities, research offices, and consulting firms, contributing to strategic decision-making, internationalization processes, and the assessment of the economic impact of business choices.

The Policy track trains policy analysts capable of evaluating the impact of public policies using advanced quantitative methods. It is designed for graduates prepared to support complex decision-making in public institutions, international organizations, research institutes, and consulting companies, providing evidence-based analyses in critical contexts related to sustainability, energy transition, healthcare, and social policies.

In addition to professional opportunities, the programme also prepares students for further academic studies, facilitating access to doctoral programmes and PhDs at international universities.

Why Choose MEDIP

MEDIP is a modern and competitive Master's programme that responds to the evolving international socio-economic and academic landscape. It offers graduates a strong theoretical and quantitative foundation and a professional profile that is immediately relevant in today's dynamic labour market.

Master Coordinator: Professor Cinzia Di Novi (cinzia.dinovi@unipv.it)

Course website: https://medip.cdl.unipv.it

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Master degree in Economics and Data Analysis for Industry and Policy (MEDIP)

Study plan for students enrolled in the 1st year (academic year 2026/2027) - Industry Track

1° Year (60 ECTS) a.a.2026/2027					
Course	**ECTS**	**Field**	**TAF/Field**	**Year**	**Type**
DECISIONS & CHOICES	6	SECS-S/06	Specific/Statistical and Mathematical disciplines	2026	Compulsory
ECONOMETRIC METHODS	6	SECS-P/05	Specific/Economic disciplines	2026	Compulsory
ECONOMIC POLICY 12 CFU suddiviso nei seguenti moduli:					
COMPETITION POLICY AND MARKET REGULATION	6	SECS-P/01	Specific/Economic disciplines	2026	Compulsory
MACROECONOMICS	6				
GLOBAL VALUE CHAIN AND SUSTAINABILITY	6	SECS-P/07	Specific/Business disciplines	2026	Compulsory
LEADERSHIP AND ORGANIZATIONAL BEHAVIOUR	6	SECS-P/10	Specific/Business disciplines	2026	Compulsory
AI AND CODING FOR ECONOMICS LAB	6	SECS-P/05	Other/computer science	2026	Compulsory
CROSS SECTION AND PANEL DATA ANALYSIS	6	SECS-P/05	Specific/Economic disciplines	2026	Compulsory
EMPIRICAL METHODS FOR POLICY EVALUATION	6	SECS-P/01	Specific/Economic disciplines	2026	Compulsory
COMPETITION LAW	6	IUS/04	Specific/Juridical disciplines	2026	Compulsory
_____	___	_____		2026	
2° Year (60 ECTS) - a.a.2027/2028					
Course	**ECTS**	**Field**	**TAF/Field**	**Year**	**Type**
EMPIRICAL INDUSTRIAL ORGANIZATION	6	SECS-P/01	Specific/Economic disciplines	2027	Compulsory
ECONOMICS OF INNOVATION & INDUSTRIAL DYNAMICS	9	SECS-P/06	Complementary	2027	Compulsory
One course within the following:				2027	
APPLIED MACROECONOMICS	6	SECS-P/05	Complementary		
NETWORK ANALYSIS		SECS-S/01			
ECONOMICS OF DIGITAL MARKETS		SECS-P/06			
One course within the following:					
CORSO DI LINGUA ITALIANA PER STUDENTI STRANIERI	3	L-FIL-LET/12	Other/Languages	2027	
TOPICS IN APPLIED ECONOMICS		SECS-P/01	Other/Employment specific knowledge and competences		
_____	___	_____			
Elective courses (12 ECTS)	12			2027	
500000 - PROVA FINALE	24	PROFIN_S	Final dissertation	2027	
_____	___	_____		2027	

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Master degree in Economics and Data Analysis for Industry and Policy (MEDIP)

Study plan for students enrolled in the 1st year (academic year 2026/2027) - Policy Track

1° Year (60 ECTS) a.a.2026/2027					
Course	**ECTS**	**Field**	**TAF/Field**	**Year**	**Type**
DECISIONS & CHOICES	6	SECS-S/06	Specific/Statistical and Mathematical disciplines	2026	Compulsory
ECONOMETRIC METHODS	6	SECS-P/05	Specific/Economic disciplines	2026	Compulsory
ECONOMIC POLICY 12 CFU suddiviso nei seguenti moduli:					
COMPETITION POLICY AND MARKET REGULATION	6	SECS-P/01	Specific/Economic disciplines	2026	Compulsory
MACROECONOMICS	6				
GLOBAL VALUE CHAIN AND SUSTAINABILITY	6	SECS-P/07	Specific/Business disciplines	2026	Compulsory
LEADERSHIP AND ORGANIZATIONAL BEHAVIOUR	6	SECS-P/10	Specific/Business disciplines	2026	Compulsory
AI AND CODING FOR ECONOMICS LAB	6	SECS-P/05	Other/computer science	2026	Compulsory
CROSS SECTION AND PANEL DATA ANALYSIS	6	SECS-P/05	Specific/Economic disciplines	2026	Compulsory
EMPIRICAL METHODS FOR POLICY EVALUATION	6	SECS-P/01	Specific/Economic disciplines	2026	Compulsory
COMPETITION LAW	6	IUS/04	Specific/Juridical disciplines	2026	Compulsory
_____	___	_____		2026	
2° Year (60 ECTS) - a.a.2027/2028					
Course	**ECTS**	**Field**	**TAF/Field**	**Year**	**Type**
DEVELOPMENT ECONOMICS	6	SECS-P/01	Specific/Economic disciplines	2027	Compulsory
HEALTH & ENVIROMENTAL POLICY ISSUES	9	SECS-P/03	Complementary	2027	Compulsory
One course within the following:	6			2027	
INTERNATIONAL ECONOMICS AND POLICY		SECS-P/02	Complementary		
NETWORK ANALYSIS		SECS-S/01			
APPLIED MACROECONOMICS		SECS-P/05			
One course within the following:					
CORSO DI LINGUA ITALIANA PER STUDENTI STRANIERI	3	L-FIL-LET/12	Other/Languages	2027	
TOPICS IN APPLIED ECONOMICS		SECS-P/01	Other/Employment specific knowledge and competences		
_____	___	_____			
Elective courses (12 ECTS)	12			2027	
500000 - PROVA FINALE	24	PROFIN_S	Final dissertation	2027	
_____	___	_____		2027	

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Master degree
in Economics and Data Analysis for Industry and Policy (MEDIP)

Courses / Teaching Components

First year

Decisions & choices
Econometric methods
Economic policy (12 ects credits, divided into the following modules):
- Competition policy and market regulation
- Macroeconomics

Global value chain and sustainability
Leadership and Organizational Behavior
Ai and coding for economics lab
Cross section and panel data analysis
Empirical methods for policy evaluation
Competition law

Second year (Industry Track)

Empirical industrial organization
Economics of innovation & industrial dynamics
One course within the following:
Applied macroeconomics
Network analysis
Economics of digital markets

One course within the following:
- Italian language course for foreign students
- Topics in applied economics

Elective courses (12 ects)

Second year (Policy Track)

Development economics
Health & environmental policy issues
One course within the following:
International economics and policy
Network analysis
Applied macroeconomics

One course within the following:
- Italian language course for foreign students
- Topics in applied economics

Elective courses (12 ects)

DECISIONS & CHOICES

Duration (hours): 44, **CFU:6** **Semester**: spring

SSD: Mathematical analysis

People:
MOLHO Elena

Course Objectives

The course will offer an organic overview of some tools used in economics and finance models to develop a rational choice theory. The methodological part devoted to the introduction of some fundamental mathematical tools will be completed by examples and applications in economics and finance. The aim of the course is to learn how some important mathematical tools are used in economics and finance. The focus will be on modelling simple situations by use of simple mathematical tools. Besides some optimization and linear algebra techniques, some general skills such as the formalization of a model and use of deductive reasoning will be acquired by the students.

Course Prerequisites

The contents of the Mathematics basic course and some elementary models in Microeconomics, together with some basic knowledge in elementary probability theory, are considered as preliminaries.

Texts

P. Simon and L. Blume, *Mathematics for Economists*, New York; London: Norton, 1994; D. Kreps, *Notes on the Theory of Choice*, Westview Press, 1988.

Contents

Linear models with applications to economics and finance, including matrices and partitioned matrices, basic calculus rules, linear functions and systems, quadratic forms, eigenvalues and eigenvectors, diagonalization of quadratic forms, and related applications. Optimization models with applications to economics and finance, covering functions of many variables, calculus rules, unconstrained and constrained optimization, implicit functions, comparative statics, Lagrange multipliers, and applications. Decisions under risk, with utility and preference representation, decision-making under risk, the von Neumann–Morgenstern model, absolute and relative risk aversion, and hints on modern approaches to decision theory.

ECONOMETRIC METHODS

Duration (hours): 44, **CFU:** 6 **Semester**: winter

SSD: Econometrics

People: VOLPICELLA Alessio

Course Objectives

The objective of this course is to provide students with a solid understanding of the theoretical foundations of econometric methods. The course covers model specification, assumptions and formal derivation, testing and interpretation, and an introduction to time series analysis. The main focus is on the linear regression model. By the end of the course, students will be able to understand the inferential and interpretative aspects of the econometric approach to data analysis, specifying, estimating, and interpreting regression models under various scenarios, and performing hypothesis testing for the empirical validation of economic theories.

Course Prerequisites

Prerequisites include basic linear algebra such as matrices and matrix operations, limits, derivatives, minima and maxima, descriptive statistics, and basic probability theory including random variables and expectations. These provide the methodological foundation needed to follow the course.

Texts

Lecture notes will be provided. Suggested readings include Wooldridge, J. M., *Introductory Econometrics: A Modern Approach*, 7th edition, South Western College Publishing, and Enders, W., *Applied Econometric Time Series*, 4th edition, Wiley.

Contents

The course includes a refresh of simple linear regression analysis, multiple regression analysis, specification issues such as dummy variables and functional form, heteroskedasticity, autocorrelation, endogeneity and instrumental variables estimation, and an introduction to time series and dynamic models.

ECONOMIC POLICY

Duration (hours): 88, **CFU:** 12 **Semester**: winter

SSD: Economics

MODULE 1: Competition policy and market regulation

People:

CAVALIERE Alberto

Course Objectives

This course requires a solid knowledge of Microeconomics at an undergraduate level. Students should be familiar with the theory of market structures, including perfect competition, while the theory of monopoly will be reviewed at the start of the course. Elementary notions of game theory are also a prerequisite, although tutorials will be organized to fill any gaps with applications to oligopoly. The course aims to provide students with analytical skills to understand the economic foundations of antitrust policies and public utilities regulation. By the end of the course, students will be able to distinguish ex-post and ex-ante regulation, understand the methodology of antitrust investigations, evaluate the necessity of price regulation in network industries, and develop a critical view of regulation decisions and their effects on firms and consumers. Students will also be involved in project work to be presented in class, developing their communication skills.

Course Prerequisites

Familiarity with the theory of market structures, including perfect competition and basic monopoly theory, as well as elementary game theory. Tutorials will help consolidate any missing knowledge in game theory applied to oligopoly.

Texts

M. Motta, *Competition Policy. Theory and Practice*, Cambridge University Press, 2004; P. Joskow, *The Regulation of Natural Monopoly*, in A.M. Polinsky and S. Shavell (Eds.), *Handbook of Law and Economics*, Elsevier, 2007, also available online.

Contents

The course covers market power and welfare, including allocative, productive, and dynamic efficiency, market definition and assessment of market power, collusion theory and practice, vertical restraints and vertical mergers, predatory pricing and other abusive practices, network industries and the theory of natural monopoly, regulation with perfect information through linear and non-linear tariffs, and regulation with asymmetric information using cost-plus and fixed-price mechanisms. Students will learn through traditional lectures, tutorials, and project work based on real antitrust cases from the European Competition Policy Commission, linking theory with practice and developing analytical, methodological, and critical assessment skills.

ECONOMIC POLICY

Duration (hours): 88, **CFU:** 12 **Semester**: winter

SSD: Economics

MODULE 2: Macroeconomics

People: SCHETTER Ulrich

Course Objectives

This course provides students with a rigorous foundation in modern macroeconomic theory and its application to policy. Students learn to build and analyze dynamic general equilibrium models to study macroeconomic phenomena including economic growth, business cycles, and macroeconomic policy. The course develops strong analytical skills and the ability to apply theoretical insights to real-world economic problems.

Course Prerequisites

Basics in micro- and macroeconomics. Working knowledge in mathematics for economists.

Texts

The main textbook is David Romer's *Advanced Macroeconomics*, 5th edition, which provides the core theoretical framework for the course. Additional academic articles and policy-oriented readings are assigned to connect theory with empirical evidence and current policy issues.

Contents

The course begins with a review of key macroeconomic facts and the Solow growth model, followed by dynamic general equilibrium frameworks including infinite-horizon and overlapping-generations models. The analysis then turns to endogenous growth theory and the determinants of long-run economic performance and cross-country income differences. The second part of the course focuses on business cycle theory and advanced topics including financial markets and crises and macroeconomic policy.

GLOBAL VALUE CHAIN AND SUSTAIBABILITY

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Management
People: TBD

Course Objectives

This course provides students with knowledge and analytical skills to manage corporate sustainability practices throughout the business value chain. The course focuses on integrating global value chain management with sustainability principles in the international business context, equipping students to address environmental, social, and governance (ESG) challenges while maintaining competitiveness.

Course Prerequisites
A general understanding of international business and sustainability concepts is recommended.

Texts

Detailed reading materials and lecture notes are provided by the instructor. Students should consult the official University of Pavia course pages for up-to-date references and syllabus information.

Contents

The course covers sustainable international business principles and the evolving sustainability context, global value chain management including technological, environmental, and economic challenges, ESG metrics and their use in financial markets, foundational theories of international trade and investment with sustainability considerations, and ethical dilemmas balancing competitiveness with social and environmental responsibility.

LEADERSHIP AND ORGANIZATIONAL BEHAVIOUR

Duration (hours): 44, **CFU:** 6 **Semester**: winter

SSD: Management

People: SANGUINETI Francesca

Course Objectives

This course aims to provide students with a comprehensive understanding of leadership and organizational behavior (OB), focusing on how individuals and groups behave within organizations. Upon successful completion, students should be able to:
demonstrate understanding of fundamental theories and principles of leadership and OB, and their application in organizational settings; understand the underlying causes of behaviors and feelings of individuals and groups within organizations; Identify and implement strategies that enhance the attitudes, behavior, and overall effectiveness of members within an organization; understand the influence of organizational structure and culture on individual and group behavior; effectively operate within team settings; discuss and comprehend the sources of power for managers and employees, along with the relationship between power, authority, and obedience; discuss political behaviors within organizations and their ethical implications.

Course Prerequisites

No specific prerequisites are required.

Texts

Lecture slides and related materials will be made available on the KIRO platform. Case studies and required readings will be uploaded no later than one week before the corresponding class session. All materials found on KIRO will constitute the content for assessment purposes. In addition, students are encouraged to refer to the following textbook: French, R., Rayner, C., Rees, G., Rumbles, S. (2015), Organizational Behaviour, 3rd edition, John Wiley & Sons.

Contents

The course provides an overview of the main topics related to leadership and organizational behavior. It begins with an introduction to leadership and OB, followed by an analysis of personality and behavior in organizational settings. The course then explores employee engagement, motivation, and job satisfaction, as well as teamwork and organizational effectiveness. Further topics include job design, group dynamics, organizational structure and design, and organizational culture. The program also examines key theories and principles of leadership, political behavior and ethics within organizations, and concludes with a focus on organizational change and strategies for managing it.

AI AND CODING FOR ECONOMICS LAB

Duration (hours): 44, **CFU:** 6 **Semester**: spring
SSD: Economics/Econometrics
People: GERACI Andrea

Course Objectives

The course AI and Coding for Economics Lab provides students with practical programming skills for applied economic research, focusing on the transformation of raw and heterogeneous data into analysis-ready datasets. Students will learn how to design reproducible data workflows using R, with emphasis on data cleaning, wrangling, manipulation, and visualization.
The course adopts a problem-driven and hands-on approach, mirroring the typical workflow of applied economists: from raw data collection to exploratory analysis and basic econometric modeling. Once datasets are prepared, students will perform descriptive and regression-based analyses using Stata, focusing on implementation and interpretation.
The course also introduces the use of Artificial Intelligence tools as programmable components within data workflows. Students will learn how to interact programmatically with Large Language Models via APIs using R, understanding both their potential applications and limitations in economic data analysis.

Course Prerequisites

Prior exposure to programming concepts (e.g. variables, assignments, loops, conditional statements) is not required but is considered an advantage.

Texts

Teaching materials will be made available through the UNIPV e-learning platform and will consist of lecture slides, annotated R and Stata scripts, and applied datasets. Additional references and online documentation will be provided when appropriate.

Contents

Applied data workflows in R: R environment and reproducible workflows; data structures and tidy data principles; base R and tidy verse as complementary approaches.
Data cleaning, wrangling, and visualization: importing, cleaning, and transforming raw datasets; merging and reshaping data from multiple sources; exploratory data analysis and visualization.
Working with non-standard data: web data collection and basic web scraping; introduction to spatial data and descriptive spatial analysis.
From clean data to economic analysis: preparing datasets for analysis; introduction to Stata syntax and workflow; descriptive statistics and basic regression analysis; interpretation of results. AI tools in applied economic coding: Large Language Models as external computational services; API-based interaction with LLMs using R; batch processing for coding assistance, data handling, and text-based tasks; reproducibility and limitations

CROSS SECTION AND PANEL DATA ANALYSIS

Duration (hours): 44, **CFU:** 6. **Semester**: spring
SSD: Economics/Econometrics
People: CASTAGNETTI Carolina

Course Objectives

The objective of this course is to provide students with an introduction to econometric methods for the analysis of cross-section and panel micro-data. Building on the tools learned in the introductory econometrics course, the focus is on the treatment of unobserved heterogeneity, dependence over time, and the modelling of outcomes that are discrete, censored, or otherwise limited. The course covers standard linear panel data models, specification issues in micro-data applications, and basic models for limited dependent variables.

Course Prerequisites

Material covered in the introductory econometrics course.

Texts

Lecture slides and materials will be provided.

Contents

The course introduces econometric methods for the analysis of cross-section and panel micro-data. It begins with a brief review of multiple regression and modelling choices in micro-data applications, with attention to functional form, dummy variables, and common specification problems. The core of the course focuses on panel data models, covering unobserved heterogeneity, fixed and random effects, and the main issues related to estimation and inference in panel settings, including dependence over time. The final part deals with basic models for limited dependent variables, including binary response, censored/truncated models and sample selection models, with emphasis on interpretation and applications to empirical micro-data. Finally, it discusses duration models, focusing on hazard functions and estimation for censored data.

EMPIRICAL METHODS FOR POLICY EVALUTATION

Duration (hours): 44, **CFU:** 6 **Semester**: spring
SSD: Economics

People: LEONE Maria Anna

Course Objectives

This course provides an overview of modern microeconometric methods for program evaluation, covering experimental and quasi-experimental approaches with a focus on practical applications. It aims to equip students with theoretical, econometric, and analytical skills to assess causality and impact. Students will learn a variety of econometric techniques for impact evaluation, critically analyze evaluation research, and evaluate how convincingly a study identifies causal effects. By the end of the course, students will understand the main experimental and quasi-experimental approaches, the identification assumptions required for valid causal inference, and the process of implementing an impact evaluation, including defining a research question, identifying required data, and analyzing it appropriately.

Course Prerequisites

Knowledge of key microeconomic concepts and econometric analysis is recommended. A basic understanding of fundamental statistical concepts, including expected values and linear regression, is highly advised.

Texts

Lecture notes will be provided. Suggested textbooks include Angrist & Pischke, *Mastering 'Metrics: The Path From Cause to Effect*, Princeton, 2015; Angrist & Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton, 2015; Cunningham, *Causal Inference: The Mixtape*. Academic journal articles will be indicated for empirical applications.

Contents

The course covers introduction to impact evaluation, causality, potential outcomes and selection bias, randomized controlled trials, difference-in-differences, event studies, instrumental variables, regression discontinuity, and matching.

COMPETITION LAW

Duration (hours): 44, **CFU:** 6. **Semester**: winter
SSD: Law

People: GALLI Paolo; NEGRINOTTI Matteo Pierangelo

Course Objectives

The course provides students with a comprehensive understanding of European Union competition law, including its sources, key topics, and current debates regarding its application. The main focus is on the regulation of anti-competitive agreements, abuse of dominant position, and mergers and acquisitions. By the end of the course, students will understand how certain business practices—such as contracts, distribution arrangements, pricing policies, market strategies, and mergers—may, under specific circumstances, violate competition rules. Students will also become aware of the risks faced by companies involved in such cases, both in relation to public authorities and private parties.

Course Prerequisites

General knowledge of the European Union and its institutions (the European Commission, European Parliament, Council, and Court of Justice) is recommended.

Texts

R. Whish and D. Bailey, *Competition Law*, 11th edition, Oxford University Press, 2024.

Contents

The course covers the origins, legal sources, objectives, and scope of EU competition law; market definition and market power; horizontal and vertical agreements (Art. 101 TFEU – Regulation (EU) 2022/720); abuse of dominant position (Art. 102 TFEU); mergers (Reg. 139/2004); and both public and private enforcement of competition rules.

EMPIRICAL INDUSTRIAL ORGANIZATION

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Economics

People: MAZZARELLA Gianluca

Course Objectives

This course introduces students to empirical topics in industrial organization. It focuses on applying econometric methods to analyze firm behavior and market outcomes, providing students with practical skills in data analysis and interpretation within industrial economics.

Course Prerequisites

No formal prerequisites are required. However, prior knowledge of applied economics and econometrics may be useful.

Texts

Course materials include lecture slides and notes provided by the instructor through the Kiro platform. Recommended readings include Wooldridge, J., *Introductory Econometrics: A Modern Approach*, Cengage, Chapters 1, 2, 3, 4, 13, 15; Cabral, L. M. B., *Introduction to Industrial Organization*, MIT Press, 2017, Chapters 1–3; Aguirregabiria, V., *Empirical Industrial Organization: Models, Methods, and Applications*, available on Kiro. Additional scientific articles may also be discussed during the course.

Contents

The course focuses on various applications of industrial organization using the statistical/econometric software STATA. By the end of the course, students will be able to independently analyze datasets and produce econometric inference.

ECONOMICS OF INNOVATION & INDUSTRIAL DYNAMICS

Duration (hours): 66, **CFU:** 9 **Semester**: winter
SSD: Economics

People: FONTANA Roberto

Course Objectives

The course focuses on the growth and survival of industries and firms, a topic crucial for overall economic development. To understand how industries evolve, the course examines how new or improved production methods and products are introduced, with special attention to the role of technology as a key driver of industrial competition. Students will study the entry, exit, and growth of firms in various industrial markets, such as automobiles, tires, semiconductors, lasers, networking products, and computers. The formation of oligopolies resulting from product variety, economies of scale and scope, advertising, and distribution will also be analyzed. The course encourages consideration of possible national policies and strategies for corporate success.

Course Prerequisites

Basic knowledge of Industrial Organization is recommended.

Texts

Reading materials are divided into two categories: required readings (maximum two items per lecture) and suggested readings, which may be referred to during lectures. References for these readings are provided during each class.

Contents

The course covers technological regimes and patterns of innovative activity, sources of invention in large firms, the evolution of new industries, corporate leadership turnover, industry shakeouts, alternative explanations for shakeouts and industry concentration, determinants of entry in new industries and market niches, firm growth, and persistence in innovation.

APPLIED MACROECONOMICS

Duration (hours): 44, **CFU:** 6 **Semester**: spring

SSD: Econometrics

People: VOLPICELLA Alessio

Course Objectives

This module provides students with techniques in identification, estimation, and inference, and their practical implementation to address macroeconomic questions. Students will learn to apply these methodologies to empirical and policy-relevant macro issues. Given the broad range of tools used in macroeconometrics, the course reflects this variety while focusing on the most relevant methods for applied macro analysis.

Course Prerequisites

Basic knowledge of macroeconomics and econometrics is required.

Texts

Lecture notes will be provided. Suggested reading includes Kilian and Lütkepohl, *Structural Vector Autoregressive Analysis*, Cambridge University Press, 2017.

Contents

The course covers a refresh of time series analysis and maximum likelihood estimation, Bayesian econometrics, vector autoregressions (VARs), and local projections (LPs), providing students with the methodological foundation to address applied macroeconomic questions.

NETWORK ANALYSIS

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Statistics

People: SPELTA Alessandro

Course Objectives

The course provides an interdisciplinary introduction to the emerging field of network science and its applications. Topics include the mathematics of networks (graph theory), data analysis, and applications to economics, sociology, finance, and other fields. Students will be introduced to current research in complex systems and will apply the acquired knowledge to conduct their own analysis of a real-world network dataset of their choice as part of a final project. By the end of the course, students will understand the basic concepts of graph theory and complex networks, examine models of network formation and the scale-free property, analyze emergent properties of real networks such as degree correlations and centrality, explore community structures and methods for their identification, and deepen their understanding of network motifs and their functional relevance.

Course Prerequisites

Knowledge of algebra is required, in particular familiarity with matrix calculus.

Texts

Barabási, A.-L., Network Science, first edition. Basic knowledge of statistics, with particular reference to probability distributions, is also required.

Contents

The course covers an introduction to network science, including the definition of networks and graphs and their role in natural and artificial systems; graph theory, with fundamental concepts such as nodes, edges, directed and undirected graphs, and their mathematical representation; random networks and models of network formation, with comparisons between random and real networks; scale-free networks and the Barabási–Albert model, including hubs and scale-free properties; degree correlations and their measurement and impact on network topology; centrality measures and weighted networks; community detection in complex networks; and network motifs and their statistical analysis in real networks.

ECONOMICS OF DIGITAL MARKETS

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Economics

People: KARAKOC PALMINTERI Gulen

Course Objectives

The course aims to introduce students to the main features of the digital economy and to the related competition and regulatory issues. The course also analyzes real-world cases from digital markets, providing students with the analytical tools needed to understand market functioning, firm behavior, and policy challenges in digital environments.

Course Prerequisites

Students are expected to have at least a basic knowledge of microeconomics and a basic understanding of game theory.

Texts

Belleflamme, P. and Peitz, M., The Economics of Platforms: Concepts and Strategy, 2021.
Comino, S. and Manenti, F. M., Industrial Organization of High-Technology Markets: The Internet and Information Technologies, 2014.
Additional lecture notes and materials may be provided during the course.

Contents

The course includes a brief review of basic microeconomics and game theory, the economics of offline markets with particular attention to competition under consumer inertia, switching costs and consumer poaching, industrial organization of digital markets, market efficiency, price dispersion, versioning and bundling, network effects in digital markets including demand with network effects, technology adoption and market failures such as excess inertia, competition in network markets and two-sided networks, innovation economics with a focus on intellectual property rights, patents and cumulative innovation, privacy preferences in digital markets, and antitrust issues in digital markets.

DEVELOPMENT ECONOMICS

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Economics

People: LEONE Maria Anna

Course Objectives

The course provides an overview of development economics mainly from a microeconomic perspective. Its central aim is to present basic analytical and empirical tools to understand household decision-making and the functioning of markets and institutions in developing countries. The course introduces economic development and its measurement, examines the role of human capital—particularly health and education—as a key determinant of development, and analyses how imperfections in land, labour, and credit markets constrain growth in poor countries. Students are introduced to recent research in development economics and to modern empirical methodologies used to evaluate the impact of policies and programs. By the end of the course, students will understand the determinants of decisions made by individuals, households, and firms, the constraints they face, and the causes of extreme poverty, high child mortality, and low educational attainment. Students will be trained to critically read academic articles, formulate research questions and testable hypotheses, and develop critical thinking about development policies and programs.

Course Prerequisites

Knowledge of key concepts in economic theory and econometric analysis is recommended.

Texts

Selected chapters from Ray, D., *Development Economics*, Princeton University Press, 1998, and Banerjee, A. V. and Duflo, E., *Poor Economics*, PublicAffairs, 2011. A complete reading list of academic papers and course materials will be provided at the beginning of the course.

Contents

The course covers an introduction to economic development, poverty, and inequality; empirical methods for development program evaluation; education and health; land markets; credit markets and microfinance; conflict and development; gender and development; early childhood development in developing countries; social norms; and the role of media in development.

HEALTH & ENVIRONMENTAL POLICY ISSUES

Duration (hours): 66, **CFU:** 9 **Semester**: winter
SSD: Economics

People: DI NOVI Cinzia; MALPEDE Michele Maurizio

Course Objectives

The course provides an economic perspective on key health and environmental policy issues. It aims to introduce students to the application of microeconomic theory and empirical analysis to the organization, regulation, and financing of health care systems, as well as to environmental problems such as pollution, sustainability, and climate change. Particular attention is devoted to market failures, government intervention, and the evaluation of public policies affecting health and environmental outcomes.

Course Prerequisites

Students are expected to have a solid background in microeconomic theory and a basic knowledge of regression analysis.

Texts

The course is based on selected academic articles in health economics, environmental economics, and public policy, together with lecture slides.
As a general reference, students may consult Folland, Goodman, and Stano, *The Economics of Health and Health Care*, Seventh Edition, Prentice Hall. Additional readings on environmental economics will be provided during the course.

Contents

The course covers the economic analysis of health production and health care delivery, the demand for health and health insurance, asymmetric information in health insurance markets, and the role of government in health care systems. It also addresses environmental quality and its relationship with economic activity, policy instruments for controlling pollution and environmental externalities, and the interaction between environmental conditions, health outcomes, and public policy.

INTERNATIONAL ECONOMICS AND POLICY

Duration (hours): 44, **CFU:** 6 **Semester**: winter
SSD: Economics

People: NICOLINI Marcella

Course Objectives

The course provides students with the analytical tools needed to study international trade and international macroeconomics. Upon completion, students will be able to understand and interpret the global economic landscape, with particular reference to trade policies, exchange rate regimes, and macroeconomic policy coordination. The course also offers insights into the behavior of multinational enterprises and their role in the global economy. A further objective is to raise students' awareness of the United Nations Sustainable Development Goals, with specific attention to No Poverty, Decent Work and Economic Growth, Industry, Innovation and Infrastructure, and Peace, Justice and Strong Institutions, highlighting how economic theory and policy contribute to their achievement.

Course Prerequisites

Students are expected to have a solid knowledge of the main concepts of microeconomics, including consumer behavior, demand theory, and market equilibrium under perfect competition, monopoly, and monopolistic competition. A basic understanding of macroeconomics, including national accounting and the IS–LM framework, as well as familiarity with fundamental concepts of statistical inference, is also required.

Texts

The main reference for the course is Krugman, Obstfeld, and Melitz, International Economics: Theory and Policy, Pearson. Additional teaching materials and instructor's notes will be provided during the course. Current events and policy debates will also be discussed through selected articles from newspapers and other relevant sources.

Contents

The course is divided into two main parts. The first part focuses on international trade theory, covering the gravity model, classical and modern theories of trade, including the Ricardian, Heckscher–Ohlin, and Krugman models, as well as the main instruments and effects of trade policy. The second part addresses international macroeconomics, examining the balance of payments, national accounts in open economies, exchange rate determination and regimes, the relationship between exchange rates, prices, interest rates, and trade balances, the Mundell–Fleming model, and the causes and consequences of currency crises.

TOPICS IN APPLIED ECONOMICS

Duration (hours): 22, **CFU:** 3 **Semester**: spring
SSD: Economics

People: TBD

Course Objectives

This seminar-style course introduces students to recent literature in applied economics, with a specific focus on energy and environmental economics. Each lecture examines relevant theoretical issues, which are then reconsidered in lab sessions where students apply the theoretical models to real and simulated datasets using the econometric software STATA. The course aims to illustrate the implications of contemporary economic theory in these fields and develop practical data analysis skills.

Course Prerequisites

Basic knowledge of econometrics and counterfactual analysis techniques is required.

Texts

Readings consist of papers published in leading international journals in the fields of energy and environmental economics. Specific readings will be provided by the instructor.

Contents

The course covers the relationship between environmental quality and the level of economic activity, as well as models for energy demand/supply, including applications of these models to empirical datasets.

ITALIAN LANGUAGE FOR FOREIGN STUDENT

Duration (hours): 22, CFU: 3 **Semester**: winter
SSD: Italian linguistics

People:
FRANCESCHINI Federico

Course Objectives

At the end of the course, students will be able to understand the basic ideas of simple and relatively complex texts on both concrete and abstract topics. They will also be able to interact with some fluency and spontaneity, producing clear texts on the topics covered and clarifying their point of view with relative fluency.

Course Prerequisites

No prerequisites are required.

Texts

•Bozzone Costa, R., Fumagalli, L., Rota, D., *Primo Contatto: Corso di Lingua Italiana per Stranieri Livello A1*, Loescher Editore.
•Mezzadri, M., *GP – Grammatica Pratica della Lingua Italiana – A1–C1 For English Speakers*, Bonacci Editore.
•Aloisi, E., Bertelli, A., Fiamenghi, N., Scaramelli, E., *Andiamo! Corso di Italiano Multilivello per Immigrati Adulti A2–B1*, Loescher Editore.

Contents

The course covers topics of everyday life, with motivation primarily through oral interaction activities and the use of subtitled and untitled pictures and videos to support vocabulary. Cross-cultural aspects are emphasized. Students will practice communicating by introducing themselves, expressing likes and dislikes, asking about getting around town, discussing leisure activities, describing their day, making arrangements, interacting in stores, and asking and giving directions. Lexicon includes greetings, expressions with *being* and *having*, expressions of time and numbers, leisure activities, adjectives to describe people, places and food, transportation, musical instruments, buildings and objects, family, parts of the day, days of the week, adverbs and expressions of frequency and time, foods, expressions indicating quantity, and spatial words. Structures include present indicative of regular, irregular, and reflexive verbs, imperative, past perfect and past participle of regular verbs, determinative and indeterminative articles, gender and number of nouns and adjectives, simple and articulated prepositions, coordinating conjunctions, possessive adjectives, third person direct and indirect pronouns, and *there is/there are*. Hints of specialized language, such as economic Italian, are also introduced.