

SCHOOL OF ECONOMIC SCIENCES

Department of Economics

Department of International & European Economic Studies

STUDY GUIDE M.Sc. IN ECONOMICS full-time program

Academic year 2022-23



PART I: INFORMATION ABOUT THE INSTITUTION

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS (AUEB)

Contact details

Address: 76, Patission Str. GR-104 34, Athens Telephone number: +30-210-8203911

Website: https://www.aueb.gr e-mail: webmaster@aueb.gr

Facebook: https://www.facebook.com/auebgreece

Twitter: https://twitter.com/aueb

Linkedin:https://www.linkedin.com/school/athens-university-of-economics-and-business/mycompany/

Youtube: https://www.youtube.com/channel/UCPncunqp3bMuAHHeCikhalg

Instagram: https://www.instagram.com/aueb.gr/

ACADEMIC AUTHORITIES

The rectorate authorities consist of the Rector and the Vice Rectors:

Rector:

Professor Dimitris Bourantonis

Vice Rectors:

Vice Rector of Academic Affairs and Personnel

Professor Vasilios Vasdekis

Vice Rector of Research and Lifelong Learning

Associate Professor Georgios Lekakos

Vice Rector of Financial Planning and Infrastructure

Professor Konstantinos Drakos

Vice Rector of International Cooperation and Development

Professor Vasilios Papadakis

AUEB's OPERATIONAL STRUCTURE

The organization and operation of the Institution is defined by current legislation as in force. Athens University of Economics and Business is under the supervision of the Ministry of Education and Religious Affairs. Its governing bodies include:

The Governing Council The Senate

The Rector
The Vice-Rectors
The Executive Director

Until the Governing Council assumes its duties, administration is exercised by the University's Rector's Council.

AUEB's ACADEMIC STRUCTURE

The Athens University of Economics and Business is structured by academic units of two (2) levels: a) the Schools, and b) the Departments

Each School is structured by at least two (2) Departments, covers a domain of related scientific areas, and ensures the interdisciplinary approach to teaching and research between its departments. The School is responsible for supervising and coordinating the operation of the Departments and the educational and research work produced, in accordance with the Internal Operating Regulations. Bodies of the School, according to Law 4957/2022 (A 141) as applicable, are: a) the Dean and b) the Dean's Council

The Department is the University's fundamental academic unit and aims to advance a specific field of science, technology, letters and arts through education and research. The Department consists of all the members of the Teaching & Research Staff (DEP), the members of the Special Education Staff (EEP), the members of the Laboratory Teaching Staff (EDIP) and the members of the Special Technical Laboratory Staff (ETEP).

Bodies of the Department, according to Law 4957/2022 (A 141) as applicable, are: a) the Assembly, b) the Board of Directors, c) the Head/Chair and d) the Deputy Head/Chair.

The Athens University of Economics and Business consists of three Schools & eight Departments:

1. SCHOOL OF ECONOMIC SCIENCES

Department of International and European Economic Studies

Department of Economics.

2. SCHOOL OF BUSINESS

Department of Management Science and Technology

Department of Business Administration

Department of Accounting and Finance

Department of Marketing and Communication.

3. SCHOOL OF INFORMATION SCIENCE AND TECHNOLOGY

Department of Informatics

Department of Statistics

ADMINISTRATIVE BODIES OF POSTGRADUATE STUDY PROGRAMS

Competent bodies for the organization and operation of the Postgraduate Study Programs are:

- a) the Senate,
- b) the Assembly of the Department,
- c) the Coordinating Committee (CC), and
- d) the Director of the Postgraduate Program.

Especially for inter-departmental, inter-institutional and joint programs, the responsibilities of the Department's Assembly are exercised by the Curriculum Committee.

UNIVERSITY STAFF

The University staff consists of the following categories:

- TEACHING STAFF:

- Teaching & Research Staff (DEP)
- Emeritus Professors
- Visiting Professors
- Special Education Staff (E.E.P.)
- Laboratory Teaching Staff (E.DI.P.)
- Special Technical Laboratory Staff (E.T.E.P.)
- Auxiliary Teaching Staff
- Teaching Fellows
- Scientific Faculty Members
- Adjunct Instructors
- Secondet Teachers

- ADMINISTRATIVE STAFF

SERVICES

The Athens University of Economics and Business provides both administrative and other services (meals, housing, library, sport facilities etc.) aiming at serving both its students and staff. More information on the organization and operation of the University's services can be found on the University's website (http://www.aueb.gr/en).

GENERAL DESCRIPTION OF THE UNIVERSITY

The Athens University of Economics and Business (AUEB), as a Higher Educational Institution, is a legal entity governed by public law and supervised by the Ministry of Education and Religious Affairs.

AUEB is, in order of seniority, the third Higher Education Institution of the country and the first in the fields of Economics and Business Administration. Later, the scientific fields of Informatics and Statistics

were added. Since its founding, in 1920, AUEB has a rich and noteworthy tradition of significant academic achievements that define the present and create excellent prospects for the future.

The University, as a center of excellence, in academic research and teaching, is rated as one of the leading universities in its subject areas in Greece and one of the best internationally. The high level of its staff, the quality in teaching and research, the modern curriculum/courses, but also the high demand of its graduates significantly enhance the University's brand name and reputation, in Greece and abroad. Detailed information on the study programs is provided in the study guides and departmental websites.

CHIEF REGULATIONS OF THE UNIVERSITY (INCLUDING ACADEMIC RECOGNITION PROCEDURES)

The regulations include, for example:

- The University's Internal Operating Regulations
- The Organization of Administrative Services
- The Regulations for the Operation of Postgraduate and Doctoral Study Programs
- The Internal Regulation for conducting postdoctoral research

AUEB'S ECTS COORDINATOR

The University's ECTS Coordinator is the Quality Assurance Chairperson, who ensures the University's compliance with the principles and rules of the European credit accumulation and transfer systems, supervises compliance and implementation and is responsible for the full recognition and transfer of credit units.

More information can be found on the University's website (http://www.aueb.gr).



PART II: INFORMATION ABOUT THE MASTER OF SCIENCE (MSc) IN ECONOMICS

SCHOOL OF ECONOMIC SCIENCES

Dean: Professor Thomas Moutos

DEPARTMENT OF ECONOMICS

Chair: Professor Evangelos Vasilatos

DEPARTMENT OF INTERNATIONAL & EUROPEAN ECONOMIC STUDIES

Chair: Professor George Economides

MASTER'S PROGRAM IN ECONOMICS

Director: Associate Professor Elias Tzavalis

Contact details

Address: 47A, Evelpidon & 33, Lefkados Str., 113 62, Athens, 9th floor, office 909

Telephone number: +30 210 8203617

Email: post.econ@aueb.gr

Website: https://www.dept.aueb.gr/en/gradecon

ACADEMIC CALENDAR

Fall semester teaching: 10 October 2022 - 20 January 2023 Christmas holidays: 23 December 2022 - 6 January 2023 Fall semester exams: 30 January 2022 - 10 February 2023 Spring semester teaching: 13 February - 26 May 2023

Easter holidays: 10 - 21 April 2023

Spring semester exams: 6 - 30 June 2023

NATIONAL/BANK HOLIDAYS

Friday, October 28, 2022, The Anniversary of the "No" Thursday, November 17, 2022, The Anniversary of Polytechnio Friday, January 6, 2023, Epiphany Monday, February 27, 2023, Clean Monday Saturday, March 25, 2023, Greek Independence Day Monday, June 5, 2023, Pentecost

A) GENERAL DESCRIPTION

The MSc in Economics program is offered by the Department of Economics and the Department of International & European Economic Studies since the academic year 2018-19. It is the evolvement of the Economic Theory specialization of the MSc in Economics program of the Department of Economics, which was the first master's program in Economics run in Greece (1978) and which, during its long history, has trained highly qualified economists, many of whom now hold academic and research positions in universities and research institutes or occupy high level managerial positions on the public and private sector both in Greece and abroad.

Its aim is to educate and train economists of high scientific standards in the fields of Economic Theory and Policy, as well as Econometrics.

The program places particular emphasis on the subject areas of Macroeconomic Theory, Microeconomic Theory and Applied Microeconomics, Theoretical and Applied Econometrics, Finance Theory and Asset Pricing, Industrial Organization, Public Economics, Game Theory, International Economics, Environmental and Energy Economics, Mathematical Economics, Labor Economics, Economic Development.

QUALIFICATION AWARDED

The MSc in Economics Program awards the degree of Master of Science (MSc) in Economics.

ADMISSION REQUIREMENTS

Admissions are made on the basis of academic potential to meet the Program's high demands. Applicants are required to have:

- 1. Degree from an accredited University in scientific fields like Economics, International and European Economic Studies, Regional Economics, Finance, Statistics, Mathematics, Physics, Engineering, Informatics.
- 2. Certificate of strong command of the English language (Level C1 or C2)

The call for applications is announced on the Program's website in February each year. Applications are submitted online from February to June. Available admissions are limited. Evaluation of the applicants and admission offers are made throughout the application period and in order of priority.

Selection of candidates is based on:

- Academic performance (e.g. first degree origin, grade, years for completion, etc.)
- Certificate of English proficiency (Level C2/C1) (e.g. TOEFL with a grade greater than 79, IELTS with a grade greater than 7, TOEIC with a grade greater than 785, etc)
- Academic recommendations
- Personal interview
- GRE or GMAT scores (if available; not required)

Enrollment takes place in September-October, following an announcement of the Program's Secretariat.

EDUCATIONAL AND PROFESSIONAL GOALS

The MSc in Economics trains students to understand and analyze the interacting decisions and choices of individuals and firms using the tools of microeconomic theory, such as consumer, production and game theory. In addition, they become familiar with the basic theories, methodologies and techniques of modern macroeconomic analysis as well as study the interaction between the two main strands of economic theory. They are also exposed to econometric theory and practice the use of modern econometric models and techniques through advanced statistical/econometric computational resources.

Graduates are well equipped to either seek employment in large companies and organizations of private and public sector in Greece and abroad (such as large private companies, public authorities, Ministries, Banks) or to continue for PhD Studies in internationally known Universities in order to be employed later in Universities (as Faculty Members), research institutes and organizations, Central Banks, Research Departments of commercial banks, etc.

ACCESS TO FURTHER STUDIES

Upon completion of the MSc Program, students can access doctoral studies. In particular, many graduates of the Program continue for doctoral studies either in Greece, such as in the Department of Economics and the Department of International & European Economic Studies of AUEB, or in internationally known Universities abroad, such as Yale, MIT, Princeton, UCLA, Oxford, LSE UK, Harvard, Cambridge, Michigan, Bocconi, Groningen, Manheim, Stockholm etc.

LANGUAGE OF INSTRUCTION/EXAMINATION

The language of instruction and exams is English.

TUITION FEES / SCHOLARSHIPS

The tuition fees are 2.500 Euros and are payable in 3 installments (first installment: 900 Euros, second installment: 800 Euros, third installment: 800 Euros).

An amount of 500 Euros which is part of the first installment shall be paid to guarantee the offered position and the rest of the first installment is paid upon registration in the program at the beginning of first semester.

The remaining installments are paid at the beginning of each of the other two semesters.

The Program grants scholarships or awards to its students, based on their academic merit and achievements.

MODE OF STUDY AND OFFICIAL LENGTH OF THE PROGRAM

The MSc in Economics Program is a full-time program. It consists of either 3 or 4 academic semesters depending on whether students choose to undertake a dissertation or take extra courses. In particular, during the 1st (fall) and 2nd (spring) semester students are required to attend 4 and 5 courses respectively and then they decide whether they wish to undertake a dissertation during 3rd semester or to attend 6 advanced courses during 3rd and 4th semester.

FINAL EXAMINATION

Fall semester final exams occur in January-February and spring semester final exams occur in June. Resit exams take place in September.

EXAMINATION AND ASSESSMENT REGULATIONS

The final assessment for each course is consisted of written exams. Written exams can be partially substituted by assignments, upon the Program Committee's approval.

The formulation of the final grade in a course is determined by the course's instructor. Individual and team assignments can be part of the formulation.

Participation in the exams is mandatory.

Grades can either be round numbers or decimals to a half, from zero (0) to ten (10). The passing grades are the ones greater than or equal to 5.

If a student skips an exam, he/she fails the exam.

Failure in more than two (2) courses overall (of the total of all semester courses) means failure to complete the Program and results in the end of studies. Failure in up to two courses in an exam period allows the student to continue to the next semester, but he/she must resit the exam of this/these course(s). Failure in any of the resit exams also leads to the end of studies.

INTERNSHIP

Students of the program can, as part of their studies, do an optional Internship, under the condition that there is an employment institution. Internship takes place after the end of the teaching period, during the dissertation writing. The final selection of the students who will do an internship is made by the employment institution based on the candidates' CVs and/or personal interview. Internship is not a prerequisite for the completion of studies; it is nevertheless indicated in the diploma supplement.

STUDIES ADVISOR

The studies advisor was launched to inform and help students with issues such as:

- Program's structure and content of the courses, so that they are informed about the prerequisite courses and knowledge required to attend specific courses.
- Attendance of tutorials, labs and midterm exams, with the aim of better understanding and successful participation in the exams.
- the content of elective courses with the aim of choosing the courses that are closest to the student's personal and academic interests
- Exams results
- the continuation of their studies, both in Greece and abroad
- their professional prospects and their connection to the labor market during their studies (internship), but also after their studies.
- Any other issue or topic raised by the student that may be related to or affect his/her studies.

For the academic year 2022-2023, the Assistant Professor of the Department of Economics <u>Eleftherios</u> <u>Zacharias</u> has been appointed studies advisor.

STUDENTS MOBILITY

Students of the Program have the possibility to seek mobility opportunities within the Erasmus and Erasmus+ programs in which the university participates (https://www.aueb.gr/el/erasmus).

COURSE STRUCTURE DIAGRAM WITH CREDITS

COURSES PER SEMESTER	ECTS credits
Preparatory courses (September)	
Preparatory in Mathematics for Economists	_
Preparatory in Statistics for Economists	_
(or Introduction in Economics for non-Economists)	_
1st (Fall) Semester	
Microeconomic Theory	7,5
Macroeconomic Theory	7,5
Econometrics	7,5
Mathematics for Economists	7,5
total ECTS of 1st Semester:	30
2nd (Spring) Semester	
Microeconomic Theory and Policy	6
Macroeconomic Theory and Policy	6
Data Analysis, Applied Econometrics and Computational Methods	6
Two elective courses from the list of 2nd semester electives*	2×6=12
total ECTS of 2nd Semester:	30
3rd (Fall) Semester	
Dissertation	30
or	
3rd (Fall) and 4th (Spring) Semesters (instead of dissertation)	
Six elective courses from the list of 3rd and 4th semester electives**	6×5=30
total ECTS of MSc in Economics:	90

*2nd semester electives (6 ECTS each)

Industrial Organization
Finance Theory
Quantitative Methods in Finance
Public Finance
Environmental Economics
Mathematical Economics
Economic Development and Social Policy
labor Economics
Large data and Statistical Learning

** 3rd and 4th semester electives (5 ECTS each)

Advanced Topics in International Trade
Advanced Topics in International Macroeconomics
Advanced Topics in Theoretical and Applied
Econometrics
Advanced Topics in Game Theory and Information
Economics
Advanced Topics in Finance
Advanced Topics in Economic Growth
Advanced Topics in Public Finance
Advanced Topics in Monetary Policy

B) DESCRIPTION OF INDIVIDUAL COURSE UNITS

Course title	PREPARATORY IN STATISTICS FOR ECONOMISTS
Course code	m11201f
Type of course	Non compulsory
Level of course	Master's
Year of study	1st
Semester	1st (preparatory stage)
Number of credits allocated	0
Instructor	Panagiotis Konstantinou , Assistant Professor, Department of International & European Economic Studies, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	The goal of this prep course is to equip students with the essential mathematical and statistical background for the smooth attendance of the econometric and, more generally, quantitative courses.
Prerequisites	Knowledge of statistics and mathematics at undergraduate level
Course contents	The purpose of this course is to refresh the basic concepts of statistics needed in econometrics and other courses. The topics covered are the following. Continuous and discrete random variables, probability and distributions. Expected value, variance, moments. Basic theoretical distributions. Multivariate distributions, conditional distributions. Stochastic independence, covariance and correlation. Sampling distributions. Hypothesis testing and estimation based on the method of maximum likelihood. Other methods of estimation (method of moments, etc.). The laws of large numbers and the central limit theorems. Presentation of the linear model using linear algebra. Estimation of the linear model with least squares and maximum likelihood methods.
Recommended reading	M.H. DeGroot (1986): <i>Probability and Statistics</i> , 2nd ed., Addison Wesley (ch1-8) Johnston, J. and J. DiNardo (1997): <i>Econometric Methods</i> , 4th ed, McGraw-Hill. (app A, B) W.H. Greene (2012): <i>Econometric Analysis</i> , 7th ed, Prentice Hall. (app A, B, C, D)
Teaching methods	Lectures and exercises
Assessment methods	Without grading
Language of instruction	English

Course title	PREPARATORY IN MATHEMATICS FOR ECONOMISTS
Course code	m11202f
Type of course	Non compulsory
Level of course	Master's
Year of study	1st
Semester	1 st (preparatory stage)
Number of credits allocated	0
Instructor	Spyridon Vassilakis, Professor, Department of International & European
	Economic Studies, AUEB
Objective of the course	The purpose of this preparatory course is to provide the level of knowledge in
(preferably expressed in	mathematics which is necessary for the students who will attend the Program.
terms of learning outcomes	In particular:
and competences)	Knowledge: Upon completion of the course, students will know the basic concepts
	of linear algebra, scalar and vector optimization, convex sets, concave and quasi-
	concave functions, the basic theorems of optimization on existence, necessary
	conditions, sufficient conditions and properties of optimal solution sets, and their
	importance for economics.
	Skills: Upon completion of the course, students will be able to use the knowledge
	they have gained to solve linear algebra problems, scalar and vector optimization

	problems, and to utilize the elementary tools of convexity. Abilities: Upon completion of the course, students will be able to follow the required MSc courses.
Prerequisites	none
Course contents	It includes topics like set theory, vectors in Rn, topology in the Euclidian space, functions and equations, linear algebra and matrices, differential calculus, concave / quasi-concave and convex / quasi-convex functions, optimization with and without constraints.
Recommended reading	1.Simon and Blume: Mathematics for Economists 2.takayama: analytical methods in economics 3.de la Fuente: Mathematical Methods and Models for Economists 4.webster: convexity 5.nikaido: introduction to sets and mappings in modern economics
Teaching methods	Lectures/exercises
Assessment methods	exercises
Language of instruction	English

Course title	MICROECONOMIC THEORY
Course code	m11104f
Type of course	Compulsory
Level of course	Master's
Year of study	1st
Semester	1st (fall)
Number of credits allocated	7,5
Instructor	Spyridon Vassilakis , Professor, Department of International & European Economic Studies, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	knowledge Upon completion of the course, students will know some of the basic concepts of scalar and vector optimization, competitive equilibrium, and welfare economics, and their importance for economics. Skills Upon completion of the course, students will be able to use the knowledge they have gained to solve economic problems with the elementary tools of competitive equilibrium, and welfare economics. Abilities Upon completion of the course, students will be able to follow more advanced/specialized courses and initiate their study of this part of the economics literature.
Prerequisites	none
Course contents	Producer Theory: Production Sets, production functions, profit maximization Testable implications of producer theory (WARP) Properties of indirect profit/net supply functions 2 Representative producers. Consumer theory: Preferences, utility functions, utility maximization. Testable implications of consumer theory (WARP, GARP, SARP) Properties of indirect utility functions Properties of individual excess demand functions (H-W-B-SARP) Properties of market excess demand functions (H-W-B - but not always SARP or WARP) Positive and normative representative consumers. Competitive equilibrium: Definition: computational examples, competitive equilibrium with taxes and lump-

	sum transfers
	Special cases: (1x1x2 economy, 2x2x2 economy, exchange economy, small open
	economy, economies of Leontief and von Neumann).
	Existence: large non-convexities relative to market size, non-interior endowments.
	Uniqueness: WARP and constant returns to scale, WARP in an exchange economy,
	taxes, externalities, economies with an arbitrarily large number of equilibria,
	economies with Pareto-ranked equilibria.
	Stability: WARP in an exchange economy, substitutes and complements, wealth
	effects, economies with a unique and unstable equilibrium.
	Comparative statics: substitutes and complements, wealth effects, the transfer
	paradox the paradox of productivity, the paradox of piecemeal policy reforms, the
	paradox of immiserating growth.
	Testable implications: level of aggregation, externalities, testability of local stability
	and uniqueness.
	Welfare analysis:
	Pareto efficient points: definition, examples, two methods of calculation
	First and second welfare theorems: conditions for efficient equilibria, interactions
	between efficiency and distribution
	Distortions (third welfare theorem): efficiency when different agents face different
	relative prices
	Compensatory distortions (second-best theorem)
	Equilibrium with externalities/public goods: The four kinds of externalities, market
	and non-market corrections.
	The national income test: national income as an index of welfare, with and without
	distortions.
Recommended reading	Andreu Mas-Colell, Michael D. Whinston and Jerry R. Green: Microeconomic
necommended reading	Theory
	2. Hal R. Varian: Microeconomic Analysis.
	3. David M. Kreps: Microeconomic Foundations I. Choice and Competitive Markets
	4. Geoffrey A. Jehle and Philip J. Reny: Advanced Microeconomic Theory
Teaching methods	Lectures/exercises
Assessment methods	Written examinations
Language of instruction	English
Language of instruction	Luguan

Course title	MACROECONOMIC THEORY
Course code	m11105f
Type of course	compulsory
Level of course	Master's
Year of study	1st
Semester	1 st (fall)
Number of credits allocated	7,5
Instructor	George Alogoskoufis, Professor, Department of Economics, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	The course aims to present the main models used in modern macroeconomic analysis and research, and to familiarize students with them as well as with current analytical methods and techniques.
Prerequisites	It assumes some familiarity with undergraduate macroeconomics and basic mathematical tools.
Course contents	We focus on models of economic growth and aggregate fluctuations, unemployment and inflation and monetary and fiscal policy. The course covers the following topics: 1. Models of exogenous and endogenous growth. 2. New Classical and New Keynesian models of aggregate fluctuations. 3. Models of Monetary and Fiscal Policy

Recommended reading	Alogoskoufis, G. (2019), <i>Dynamic Macroeconomics</i> , Cambridge, MA., MIT Press
Teaching methods	Lectures and exercises
Assessment methods	Final written exam and class assignments
Language of instruction	English

Course title	ECONOMETRICS
Course code	m11106f
Type of course	Compulsory
Level of course	Master's
Year of study	1st
Semester	1 st (fall)
Number of credits allocated	7,5
Instructors	Angelis Alexopoulos, Post Doc, University of Cambridge
	Stylianos Arvanitis, Associate Professor, Department of Economics, AUEB
Objective of the course	The goal of this course is to equip students with rigorous econometric background
(preferably expressed in	that will allow the attendance of econometric topics in subsequent courses, the
terms of learning outcomes	study of empirical papers from various fields in economics, and the use of
and competences)	computing.
Prerequisites	Knowledge of statistics and linear algebra at undergraduate level
Course contents	Part A:
	• The linear regression model: OLS estimation and hypothesis testing.
	• Large sample properties of the OLS estimators and hypothesis testing by relaxing
	the normality assumption.
	Generalized Least Squares.
	• Time series and panel data regression.
	The generalized linear model: definition and estimation.
	Part B:
	1. Introduction to the theory of M-Estimators and inference. Statistical models with
	structure representable by optimality characterizations and identification. The
	empirical analogue of the optimization problem. Definition and derivation of the
	estimators and the subsequent tests. Asymptotic properties of estimators or tests:
	consistencies, rates of convergence and asymptotic distributions derivable by
	convergence of stochastic processes. Examples.
	II. a. Parametric Models: The Kullback-Leibler (KL) divergence and the theory of the
	likelihood function. Definition, properties, asymptotic behavior. The MLE (maximum
	likelihood estimator): consistency, rates of convergence, asymptotic distribution.
	The limiting Fisher Information Matrix and asymptotic efficiency. The likelihood ratio
	test (LR), and asymptotic properties. A glimpse on the issue of misspecification of
	the likelihood function. Numerical issues and examples.
	II.b.1. Semi-Parametric Models: moment equalities-inequalities and set
	identification. Generalized Method of Moments criteria, weighting matrix, GMM
	Estimator (the two step and the adaptive versions), consistency, rates and
	asymptotic distribution, (Gauss-Markov) optimal choice of the weighting matrix,
	hypothesis testing, J-test. Special cases: Score estimator in parametric models,
	Instrumental Variables Estimator-Endogeneity in the Linear Model, Full Information
	Instrumental Variables Efficient Estimator, etc. Numerical issues and further
	examples.
Recommended reading	Part A:
necommended reading	1. W.H. Greene (2012): <i>Econometric Analysis</i> , 7th ed, Prentice Hall.
	2. F. Hayashi (2000): <i>Econometrics</i> , Princeton UP
	Part B:
	1. Davidson J., Econometric Theory, Blackwell, 2000.
	2. Judge, George G., and Ron C. Mittelhammer, An information theoretic approach

	to econometrics, Cambridge University Press, 2011. 3. Hayashi F., Econometrics, McGraw-Hill, 2000. 4. Gourieroux C., Monfort A., Statistics and Econometric Models, CUP, 1995. 5. Owen, Art B., Empirical likelihood, Chapman and Hall/CRC, 2001. 6. van der Vaart A., Asymptotic Statistics, CUP, 2000.
Teaching methods	Lectures and labs in R
Assessment methods	Final exam, project.
Language of instruction	English

Course title	MATHEMATICS FOR ECONOMISTS
Course code	m11107f
Type of course	compulsory
Level of course	Master's
Year of study	1st
Semester	1 st (fall)
Number of credits allocated	7,5
Instructor	Vanghelis Vassilatos, Professor, Department of Economics, AUEB
Objective of the course	This course is an introduction to commonly used dynamic optimization methods in
(preferably expressed in	economics. The emphasis is on solution methods rather than rigorous proofs.
terms of learning outcomes	After completing the course, students will be able to compile the knowledge they
and competences)	have gained and, apply the techniques mastered in order to analyze, evaluate and
	solve dynamic models of the kind encountered in economics.
Prerequisites	
Course contents	Discrete Dynamics. First, second and higher order linear difference equations. Linear
	difference equations systems. Continuous Dynamics. First, second and higher order
	linear differential equations. Linear differential equations systems. Phase Diagrams.
	Solution methods of linear rational expectations systems. Dynamic Optimization in
	Discrete and Continuous Time Dynamic Systems. Optimal control. Dynamic
	programming.
Recommended reading	Adda, Jerome and Cooper, Russell, Dynamic Economics, MIT Press, 2003.
	Blanchard, Olivier and Fischer, Stanley, Lectures on Macroeconomics, MIT Press,
	1989.
	Caputo, Michael R., Foundations of Dynamic Economic Analysis, Optimal Control
	Theory and Applications, Cambridge University Press, 2005.
	Chiang, Alpha, Elements of dynamic optimization, McGraw-Hill, 1992.
	Farmer, Roger, The Macroeconomics of Self-Fulfilling Prophecies, MIT Press, 1993.
	Gandolfo, Giancarlo, Economic Dynamics, Springer 1997. Hoy, Livernois, McKenna, Rees, Stengos, Mathematics for Economics, 2nd edition,
	MIT Press, 2001.
	Kamien, Morton and Schwartz, Nancy, Dynamic Optimization, North Holland 1991.
	Ljungqvist, Lars, Sargent, Thomas J., Recursive Macroeconomic Theory, 3d edition,
	MIT Press, 2012.
	Shone, Ronald, Economic Dynamics, Cambridge University Press, 1997.
	Sorger, Gerhard, Dynamic Economic Analysis, Deterministic Models in Discrete Time,
	Cambridge University Press, 2015.
	Stachurski, John, Economic Dynamics, Theory and Computation, MIT Press, 2009.
	Stokey, N.L., Lucas, R.E., Recursive Methods in Economic Dynamics, Harvard
	University Press, 1989.
	Sydsaeter, Hammond, Seierstad, Strom, Further Mathematics for Economic Analysis,
	Prentice Hall, 2005
	Turkington, D.A., Mathematical Tools for Economics, Blackwell, 2007.
Teaching methods	Lectures and tutorials
Assessment methods	Final exam / Assignments (10% bonus on the final exam grade if all submitted)

Language of Instruction	Lingilon
Course title	MICROECONOMIC THEORY & POLICY
Course code	m11108f
Type of course	compulsory
Level of course	Master's
Year of study	1st
Semester	2 nd (spring)
Number of credits allocated	6
Instructor	Nikolaos Vettas, Professor, Department of Economics, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	Master the basic notions and tools concerning pricing with market power, uncertainty and information and strategic behavior – game theory.
Prerequisites	First semester courses in the MSc program, especially the Micro I and the Mathematics courses.
Course contents	 Market structure and welfare. From perfect competition to monopoly and between. Optimal pricing, elasticity, and monopoly distortion. Basic concepts in game theory. Introduction to the economics of strategic behavior. Static games of complete information and the strategic (normal) form representation. Dynamic games of complete information and the extensive form representation Subgame Perfection. Leading applications of game theory: Oligopoly theory and Bargaining Repeated games and the folk theorem; trigger strategies and collusion. Introduction to the economics of information. Risk, uncertainty and von Neumann-Morgenstern expected utility. Adverse selection and moral hazard. Static games of incomplete information. Bayes-Nash equilibrium. Revelation principle. Screening and Hidden Information. Auctions Dynamic games of incomplete information. Sequential, Perfect Bayesian equilibrium Signaling Moral Hazard. Hidden Action and Principal-agent models Managerial Incentives
Recommended reading	Main texts: A.Mas-Colell, M.Whinston and J.Green, Microeconomic Theory, Oxford, 1995 R.Gibbons, A Primer in Game Theory, Harvester Whaetsheaf, 1992 S. Bikhchandani, J. Hirshleifer and J. G. Riley, The Analytics of Uncertainty and Information, Cambridge, 2013 Additional:

Language of instruction

Teaching methods

Assessment methods
Language of instruction

English

Course title	MACROECONOMIC THEORY & POLICY
Course code	m11109f
Type of course	compulsory
Level of course	Master's
Year of study	1st
Semester	2 nd (spring)
Number of credits allocated	6
Instructors	Sarantis Kalyvitis, Professor, Department of International & European Economic

D.Kreps: A Course in Microeconomic Theory, Princeton, 1990 D.Fudenberg, and J.Tirole, Game Theory, MIT Press, 1991

Lectures and problem sets

English

Problem sets, midterm and final exam

	CAUSE AUED
	Studies, AUEB
	George Economides, Professor, Department of International & European Economic
	Studies, AUEB
	Evangelos Vassilatos , Professor, Department of Economics, AUEB
Objective of the course	Upon completion of the course, students will be able to use the basic dynamic
(preferably expressed in	models of economic growth and aggregate fluctuations and evaluate alternative
terms of learning outcomes	macroeconomic policies.
and competences)	•
Prerequisites	Macroeconomic Theory
Course contents	In this course we study the theory and empirical investigation of modern
	macroeconomic policy with emphasis on growth and economic fluctuations. The
	course aims at presenting the basic models used by economists to study the
	economic fluctuations and to analyze the basic methodologies and techniques of
	modern macroeconomic analysis. The course covers the following topics:
	macroeconomic models of closed and open economies, implications for the
	conduct of monetary and fiscal policy in models with market and policy failures.
Recommended reading	Acemoglu (2009): Introduction to Modern Economic Growth. Princeton.
necommended reading	Aghion P. and P. Howitt (2009): <i>The Economics of Growth</i> . MIT Press.
	· ·
	Alogoskoufis G. (2019): Dynamic Macroeconomics. MIT Press.
	Barro R. and X. Sala-i-Martin (2003): <i>Economic Growth</i> . 2 nd edition. McGraw Hill.
	Blanchard O. and S. Fischer (1989): <i>Lectures on Macroeconomics</i> . MIT Press.
	Drazen A. (2000): Political Economy in Macroeconomics. Princeton University Press.
	Sargent T. (1987a): Macroeconomic Theory. Academic Press.
	Sargent T. (1987b): Dynamic Macroeconomic Theory. Harvard University Press.
	Turnovsky S. (2000): <i>Methods of Macroeconomic Dynamics</i> . 2 nd edition. MIT Press.
	Végh C.A. (2013): Open Economy Macroeconomics in Developing Countries. MIT Press.
	Wickens M. (2008): Macroeconomic Theory. Princeton.
Teaching methods	Lectures and tutorials
Assessment methods	Final exam (80%) and a project (20%).
Language of instruction	English

Course title	DATA ANALYSIS, APPLIED ECONOMETRICS AND COMPUTATIONAL METHODS
Course code	m11110f
Type of course	compulsory
Level of course	Master's
Year of study	1st
Semester	2 nd (spring)
Number of credits allocated	6
Instructors	Elias Tzavalis, Professor, Department of Economics, AUEB
	Ioannis Dendramis, Assistant Professor, Department of Economics, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	The aim of this course is to introduce students to applied econometric and data analysis methods. The first part of the course (Part A) covers topics in time series models (AR, MA, ARIMA) and estimation and forecasting procedures, for them. It also presents their multivariate extension (VAR-SVAR models), and presents the topics of integration-cointegration. The second part presents volatility models, and their applications in managing economic risks. Moreover, it presents econometrics models for large datasets. At the end of the course the students would have learned the recent applied econometric techniques and become familiar with applications of them, in practice, using computer software.
Prerequisites	
Course contents	<u>Part A</u> : Time Series Models: AR(p), MA(q) and ARIMA(p,d,q) models, the estimation methods of ML, LS and non-linear LS (NLLS), Integration-cointegration analysis, Multivariate framework: VAR, SVAR and VECM models

	Part B: Volatility models (ARCH, GARCH, MGARCH etc), estimation and theoretical properties, and econometric models for large datasets, (Factor models, PCA, Large
	Panel Data).
Recommended reading	Hamilton, J.D., Time Series Analysis, Chs, 2, 3, 5, 10, 11, 15, 17, 19
	Hansen, B, Econometrics, <u>Econometrics.pdf (wisc.edu)</u>
	Green, W.H. Econometric Analysis, Chapter 20
	Hayashi, F. Econometrics, Ch9-10
	Tsay, Ruey S. Analysis of financial time series, John Wiley & Sons.
Teaching methods	Lecturing, laboratory practicals, tutorials and external seminars
Assessment methods	Written exams and assignments
Language of instruction	English

Course title	PUBLIC FINANCE
Course code	m11214f
Type of course	elective
Level of course	Master's
Year of study	1st
Semester	2 nd (spring)
Number of credits allocated	6
Instructor	Pantelis Kammas , Assistant Professor, Department of International & European Economic Studies, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	By the end of the course, students will be able to: (1) answer what determines the size of government redistributive programs (2) analyze the relationship between economic theory (theoretical models) and empirical findings and (3) explain why national governments often decide to not implement the socially optimal policy.
Prerequisites	No Prerequisites for this course
Course contents	The course provides an introduction to the basic theoretical models, empirical methodologies, and substantive findings in public finance and political economics. It covers not only theoretical and empirical research, but also the links between the two. The aim of the module is to familiarize the student with the tools of modern political economics and show how these tools can be used in order to answer what determines the size of government redistributive programs and why national governments often decide to not implement the socially optimal economic policy.
	 Acemoglu, A. Political Economy Lectures Notes https://economics.mit.edu/files/8753 Atkinson, A. and Stiglitz, J. (2015). Lectures in Public Economics New York, NY: McGraw Hill. Hindriks, J. and Myles, G. (2013). Intermediate Public Economics. The MIT Press. McCarty N., Meirowitz, A. (2007). Political Game Theory: An Introduction. Cambridge University Press. Persson, T. and Tabellini, G. (2002) Political Economics: Explaining Economic Policy. The MIT Press.
Teaching methods	Lectures
Assessment methods	Final Exams 50% and Written assignments/ Oral Presentations 50% of the final score.
Language of instruction	English

Course title	MATHEMATICAL ECONOMICS
Course code	m11216f
Type of course	elective
Level of course	Master's
Year of study	1st

Semester	2 nd (spring)
Number of credits allocated	6
Instructor	Spyridon Vassilakis , Professor, Department of International & European Economic Studies, AUEB
Objective of the course (preferably expressed in terms of learning outcomes and competences)	To obtain some level of maturity in handling advanced notions of mathematical analysis with a view towards their application in solving problems arising in Economic Theory and Econometrics.
Prerequisites	No formal prerequisites. Some familiarity with notions of real analysis is advised.
Course contents	Continuity and compactness in Euclidean spaces. Separation theorems and theorems of the alternative (Farkas, Gordan). Convex functions. Spencer's lemma and Brouwer's fixed point theorem. Applications to optimization, game theory, equilibrium theory, econometrics
Recommended reading	The following references are indicative. During the course this catalogue can be enriched with further readings. In any case the students are strongly advised to study the network of notions that are examined from as many available sources as possible 1. Roger Webster: convexity 2. G. Giorgi, Angelo Guerraggio, J. Thierfelder: Mathematics of Optimization 3. Alberto Cambini, Laura Martein: Generalized Convexity and Optimization 4. Niels Lauritzen: Undergraduate convexity 5. Hukukane Nikaido: introduction to sets and mappings in modern economics 6. Monique Florenzano and Cuong Le Van: Finite Dimensional Convexity and Optimization 7. Mokhtar Bazaraa, Hanif Sherali, C.M. Shetty: Nonlinear programming 8. Valeriu Sultan: lectures on convex sets 9. Mark Steinberger: A course in low-dimensional geometry 10. Wayne Roberts, Dale Varberg: Convex functions 11. Stephen Robinson: Convexity and Monotonicity in Finite-Dimensional Spaces 12. Michael Muger: Topology for the working mathematician 13. Kim Border: Fixed Point Theorems with Applications to Economics and Game Theory 14. P. V. Subrahmanyam: Elementary Fixed-Point Theorems 15. Claude Berge: Topological spaces
Teaching methods	Lectures, Tutorials, Exercises
Assessment methods	Final Exam, Optional Exercises
Language of instruction	English

Course title	LARGE DATA AND STATISTICAL LEARNING
Course code	m11219f
Type of course	elective
Level of course	Master's
Year of study	1st
Semester	2 nd (spring)
Number of credits allocated	6
Instructor	Fotis Papailias, Senior Lecturer, King's Business School
Objective of the course	After successful completion of this course the students must have a good
(preferably expressed in	understanding of:
terms of learning outcomes	computational inference,
and competences)	time series forecasting,
	 data features (seasonalities, nonstationarities, etc.),
	how machine learning methods work (supervised and unsupervised machine
	leaning).

	Forth and the state of the stat
	 Furthermore, students are expected to obtain the necessary skills to be able to: use scientific software and develop codes independently, collect, handle and organise large panels of data, visualise data and extract features,
	 apply machine learning techniques in practice and interpret the output in economic and finance applications.
Prerequisites	None formal pre-requisite, a basic level of maths/stats and econometrics is required.
Course contents	This course is designed to introduce students to the concepts of large data handling and analysis with machine learning techniques. We start with computational analysis and inference and discuss the Monte Carlo, Bootstrap, k-fold cross-validation and recursive and rolling estimation methodologies. We provide a solid basis for time-series forecasting based on predictive linear regressions as well as using the Kalman Smoother. Next, we discuss large data handling techniques and discuss its features (seasonalities, nonstationarities). We discuss how unsupervised machine learning methodologies (k-means clustering, principal component analysis and dynamic factor analysis) could be applied in economics and finance forecasting applications (including the construction of Financial Conditions Indexes and Uncertainty Indicators). Next, we introduce the penalised regression methodologies of ridge, lasso and elastic net. We extend our discussion to unbalanced datasets and use bridge equations, MIDAS and U-MIDAS models as suggested remedies. Finally, our special topics include adaptive learning and modelling and applications of machine learning in portfolio selection. On top of our theory discussions, the course has a "hands-on" approach where all these methods applied in real data using the R Project for Statistical Analysis as the main scientific software.
Recommended reading	 Main reading: supplied material. Supplementary readings include: James, G., Witten, D., Hastie, T., Tibshirani, T. (2013). An Introduction to Statistical Learning with Applications in R. Springer, New York. Hyndman, R.J., Athanasopoulos, G. (2019). Forecasting: Principles and Practice, 3rd Edition, OTexts: Melbourne, Australia. Sheppard, K. (2020). Financial Econometrics Notes. University of Oxford. And various academic papers discussed throughout the module.
Teaching methods	 Weekly lectures (theory & hands-on), Weekly tutorials (theory & hands-on) Learning-by-doing approach.
Assessment methods	Weights in squared brackets. • [10%] Weekly Assignments, • [30%] Project 1 (essay and code), • [30%] Project 2 (essay and code), • [30%] Final Exam.
Language of instruction	English



PART III: INFORMATION FOR STUDENTS

General Information for students

The Athens University of Economics and Business provides not only high-quality education but also high-quality student services. The adoption of the Presidential Decree 387/83 and Law 1404/83 defines the operation, organization, and administration of Student Clubs at Universities, which aim at improving the living conditions of the students and enhance their social and intellectual wellbeing through engagement and socialization initiatives.

To fulfill this objective the University ensures the required infrastructure for housing, meals, and sports activities through the operation of a student restaurant, reading rooms, library, organization of lectures, concerts, theatrical performances, and excursions in Greece and abroad. Further in this context, the University supports the development of international student relations, organizes foreign language classes, computer/software literacy classes, and courses in modern Greek as a foreign language for foreign students and expatriated Greek students.

Detailed information on meals, housing, fitness, foreign languages, cultural activities, scholarships, financial aid, is provided on the website of AUEB's Student Club at https://lesxi.aueb.gr/

Electronic Services

A significant number of procedures related to both attendance and student care are carried out electronically through applications of the University or the Ministry of Education and Religious Affairs. All applications are accessible with the same codes (username & password).

• E-mail account:

Detailed instructions for using the Webmail Service are provided at https://www.aueb.gr/el/content/webmail-manual

• Electronic Secretariat (Student Register)

The <u>Electronic Secretariat</u> application is the information system through which students can be served by the Department's Secretariat via the web.

Wireless network

Using their personal codes, students have access to a wireless network in all areas of the Athens University of Economics and Business buildings/campus. https://www.aueb.gr/en/content/wi-ficonnection

• E-Learning Platform – ECLASS

The Open eClass platform is an integrated Electronic Course Management System and is the proposal of the Academic Internet (GUnet) to support Asynchronous Distance Education Services. Instructions are provided at https://eclass.aueb.gr/info/manual.php

Medical Services, Insurance / Healthcare

Undergraduate, postgraduate and PhD students at the University who have no other medical and hospital care are entitled to full medical and hospital care in the National Health System with coverage of the relevant costs by the National Health Service Provider. The doctor's office is located in the main building and operates on some working days as announced. A psychiatric counseling service also operates at the University, staffed with a physician specializing in the treatment of mental health issues. More information can be found at https://www.aueb.gr/en/content/health-care.

Services/Facilities to Students with Special Needs

The Athens University of Economics and Business ensures the facilitation of students with special needs, through the design, implementation, and environmental adaptations, for access to the university building facilities. In the main building there are specially configured lifting machines, ramps, and elevators. There are also special regulations for conducting exams for students with special needs.

The Athens University of Economics and Business has established a Committee for Equal Access for people with disabilities and people with special educational needs. The Commission is an advisory body and submits recommendations to the competent bodies for the formulation and implementation of the policy of equal access for persons with disabilities and persons with special educational needs.

Through the Library services, students with physical disabilities are granted electronic access to the recommended Greek bibliography of the courses taught at the University. In this context, the Association of Greek Academic Libraries (SEAB) has developed a multimodal electronic library called AMELib.

More information is available at https://www.aueb.gr/en/lib/content/users-additional-needs.

Library and Study Rooms

The Library & Information Center of the University operates at the University's main building. The AUEB Library is a member of the Hellenic Academic Libraries Association (Heal-LINK), the European Documentation Centers Europe Direct and the Economic Libraries Cooperation Network (DIOBI). Three Documentation Centers operate within the library:

- The European Documentation Center
- The Organization for Economic Cooperation and Development (OECD) Documentation Center
- The Delegation Center of the World Tourism Organization (WHO)

The library contributes substantially both to meeting the needs for scientific information of the academic community and to supporting studying and research. The library provides access to:

- printed collection of books and scientific journals,
- course books used in modules,
- collection of electronic scientific journals& books

- postgraduate theses and doctoral theses that are produced in Athens University of Economics and Business and deposited in digital form at the PYXIDA institutional repository
- sectoral studies
- statistical series by national and international organizations
- audiovisual material
- information material (encyclopedias, dictionaries)
- databases on the topics used by the University
- printed collections of other academic libraries

The library lends all its printed collections, except for magazines and statistical series, in accordance with its internal rules of operation. The Library and Information Center offers reading rooms, computer workstations for visitors, photocopiers and printing machines, and interlibrary loan of books and journal articles from other academic libraries that are members of its network. More information at https://www.aueb.gr/en/library.

International Programmes and Information on International Student Mobility

Athens University of Economics and Business is actively involved in the Erasmus+ Program since 1987 promoting cooperation with universities, businesses, and international organizations of the European Union (EU) as well as in the mobility of students, teaching, and administrative staff. In addition, strengthening its internationalization objectives, it creates new opportunities through the Erasmus+ International Mobility Program. Within this framework, mobility scholarships are granted through the State Scholarships Foundation (SSF) to incoming and outgoing students of the three study cycles, according to the funding approved each year by the State Scholarship Foundation for the University. Outgoing students have the possibility to spend a period of study at a Partner Institution outside the EU with full academic recognition through the application of the ECTS credits system. More information can be found at https://www.aueb.gr/en/erasmus

Connections with the Job Market and Entrepreneurship

DASTA AUEB (https://www.aueb.gr/en/dasta) is the administrative unit of the University that plans, coordinates and implements the actions of the Athens University of Economics and Business in the following areas:

- a) development of entrepreneurship and innovation
- b) connecting students and graduates with the labor market
- c) connecting the academic community with businesses
- d) student internship programs and,
- e) supporting research utilization actions

Student Associations

Various student clubs and associations are active within the community of the Athens University of Economics and Business (https://www.aueb.gr/en/content/student-clubs).

Alumni Network

Adhering to a long tradition of educating future top executives in the economic, social, and political life of the country, AUEB is proud that thousands of its graduates hold leading positions in companies, organizations, research institutes and universities in Greece and abroad. Understanding the importance of developing and strengthening the bond with its graduates, AUEB created its Alumni network including a platform https://alumni.aueb.gr where all graduates of the University can register. The main objectives of the Network are the connection of the graduates with their colleagues and former fellow students, and diffusion of information about activities, services, and events in and around the University that concern them. More information can be found at https://alumni.aueb.gr/en

Volunteer Program

Within the framework of its strategies, the "AUEB Volunteers" Volunteering Program was launched in September 2017. The aim of the Program is to highlight important social issues and the value of participation and practical contribution, but also to raise community awareness regarding the 17 UN Sustainable Development Goals. Actions are developed around two pillars: (a) actions addressed to AUEB's Community, which have as their main objective the maintenance of the quality of the University's infrastructure based on their aesthetics and functionality, and (b) actions addressed to Greek society. More information can be found at https://auebvolunteers.gr/english-intro/

Quality Assurance

The Athens University of Economics & Business implements a quality assurance policy to continuously improve the quality of its study programs, research activities and administrative services, and upgrade the academic and administrative processes and the University's operations. The Quality Assurance Unit (MODIP) operating at AUEB coordinates and supports evaluation processes. Particularly the quality assurance of the educational process is achieved using the module/teaching evaluation questionnaire completed by AUEB students. More information can be found at https://aueb.gr/modip.

Training and Lifelong Learning Center

The Center for Training and Lifelong Learning (**KEDIVIM**) is an AUEB unit which ensures the coordination and interdisciplinary cooperation in the development of training programs, continuing education, training and in general lifelong learning, which complement, modernize and/or upgrade knowledge, competences, and skills, acquired from formal education, vocational education and initial vocational training systems or from work experience, facilitating integration or reintegration in the labor market, job security and professional and personal development. More information can be found at https://www.aueb.gr/en/content/kedivim-opa.