COURSE LAYOUT

1. GENERAL

SCHOOL	APPLIED ECONOMICS AND SOCIAL SCIENCES
DEPARTMENT	AGRICULTURAL ECONOMICS & RURAL DEVELOPMENT
STUDY LEVEL	*Undergraduate*

COURSE CODE	**306**	**SEMESTER**	1st

COURSE TITLE	MATHEMATICS FOR ECONOMISTS I	

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	5	5

COURSE TYPE	Scientific area
PREREQUISITES	
LANGUAGE	Greek
IS THE COURSE OFFERED for ERASMUS STUDENTS?	No
COURSE WEB PAGE	https://oeclass.aua.gr/eclass/courses/5064/

2. LEARNING OUTCOMES

Learning Outcomes

The course introduces the basic mathematical concepts, as they are taught in an economics department and should be known by economists. Therefore, theory is taught through applications drawn from microeconomics, macroeconomics, public economics, econometrics and finance. All applications make use of the "economic verbal environment" and the main focus is on the economic interpretation of mathematical concepts along with their rigorous mathematical interpretation.

Upon successful completion of the course, the student will:

• understand concepts of economic theory using mathematical methods
• use mathematical methods in economics (e.g. modeling)
• use alternative ways of thinking (e.g. inductive, generative)
• develop various problem-solving strategies
• present technical results in a clear and understandable manner

General competences

- Decision making
- Autonomous work
- Critical Thinking
- Free, creative and inductive thinking

3. COURSE CONTENT

- Review of basic concepts (Basic algebraic operations, Parentheses, Fractions, Elasticity of Demand, Decimals, Negative numbers, Powers, Logarithms, Roots and powers of fractions)
- Study of cost, profit, investments functions and consumer price indexes through construction of algebraic expressions and equations.
- Slope and graph of demand functions (normal and inverse), income constraint, production functions (linear, non-linear), calculation of returns to scale and point elasticity, sum of marginal revenue and marginal cost functions

- Supply-demand and basic Keynesian macroeconomics models, reduced form equilibrium prices, profit maximization in monopolies with price discrimination and comparative static analysis of the effect of tax rates using systems of simultaneous equations
- Calculation of Marginal Revenue and Marginal Cost Functions, Keynesian Multiplier, Point Elasticity of Nonlinear Demand Functions, and Tax Revenue Maximizing Tax by Derivation
- Finding marginal product, marginal cost, marginal profit, marginal utility and Keynesian multiplier functions and characterizing their convexity using 1st and 2nd order partial differential.
- Finding total cost, total revenue functions from marginal cost and marginal revenue functions by indefinite integral (with or without substitution)
- Determining coefficients of linear regression, convexity of production/consumption functions and solving Keynesian model using matrix algebra (Addition/Subtraction, Multiplication, Determinant, Inverse and Hessian Matrix)

4. TEACHING and LEARNING METHODS - Evaluation

TEACHING METHOD	In class	
USE OF INFORMATICS and COMMUNICATION TECHNOLOGIES	• e-class platform • Power-Point slides	
TEACHING ORGANISATION	*Activity*	*Work Load*
	Lectures	65
	Study at home	60
	Course total (25 hours of student work load per ECTS)	***125***
STUDENTS EVALUATION	Written final exams (100%) including: ▪ Solving exercises	

5. BILBIOGRAPHY

Suggested:

- Rosser M., Piotr L. Βασικά μαθηματικά για οικονομολόγους, Εκδόσεις ΠΑΠΑΖΗΣΗ. (ISBN: 9789600236378, ΚΩΔ.ΕΥΔΟΞΟ: 94700150)

- Bradley Teresa. Μαθηματικά για τα οικονομικά και τη διοίκηση - Βελτιωμένη έκδοση, 2η έκδ, Εκδόσεις ΚΡΙΤΙΚΗ. (ISBN: 9789605860844, ΚΩΔ.ΕΥΔΟΞΟ: 50659262)