



UNIVERSITY OF PIRAEUS

1) GENERAL

SCHOOL	ECONOMICS, BUSINESS AND INTERNATIONAL STUDIES		
ACADEMIC UNIT	ECONOMICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	OKMA007	SEMESTER	2
COURSE TITLE	MATHEMATICS II		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
Lectures	6	6	
COURSE TYPE	General knowledge		
PREREQUISITE COURSES	-		
LANGUAGE OF INSTRUCTION and EXAMINATIONS	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	https://eclass.unipi.gr/courses/OEP408/		

2) LEARNING OUTCOMES

Learning Outcomes

This course being the sequel of “Mathematics I” shares the same goals and ambitions with “Mathematics I”, i.e. it aims at providing the necessary technical background for an in-depth understanding of key concepts of both economics and business. The course touches upon topics of mathematics such as implicit differentiation, partial derivatives of two-variable functions, higher order partial derivatives, optima, first order condition, basic differentiability theorems, monotonicity, second order condition, a preliminary of the envelope theorem, elasticities, convex and concave functions, convex sets, quasi-convexity, Taylor polynomials and approximation, antiderivatives, integration techniques, the definite integral, multivariable functions, constrained optimization, least square analysis. Special emphasis is given to the way these concepts and techniques are being applied for the solution of standard problems in business and economics. The tools students will learn in this course will allow them to analyse theoretical models and derive policy conclusions for Economics and Business issues.

General Competences

Understanding the quantitative background of theoretical models in economics and business.
Acquiring a solid knowledge of the standard mathematical tools applied in economics.
Quantitative evaluation and decision taking.

3) SYLLABUS

- Implicit differentiation – Partial derivatives
- Extreema – First order condition
- Basic differentiability theorems - Monotonicity
- Second order condition – Envelop theorem
- Elasticity
- Convex and concave functions
- Convex sets – Quasi-convex(concave) functions
- Taylor polynomials
- Antiderivative
- Integration techniques
- The definite integral and applications
- Multivariable real functions
- Constrained optimisation

4) TEACHING and LEARNING METHODS

DELIVERY	In class lectures	
USE OF INFORMATION AND COMMUNICATION TECHNOLOGY	Use of ICT in lectures	
TEACHING METHODS	Activity	Semester workload
	Lectures	52
	Tutorials	26
	Study	52
	Exercises	26
	Exam	2
	Course Total	158
STUDENT PERFORMANCE EVALUATION	The evaluation of the course is implemented through a final examination. The language of evaluation is Greek	
ATTACHED BIBLIOGRAPHY	<p>-Suggested bibliography:</p> <ul style="list-style-type: none">• M. Λουκάκης, Πρόσκληση στα Μαθηματικά τ. Α, Εκδόσεις Σοφία.• G. Renshaw, Μαθηματική Ανάλυση για Οικονομικές και Διοικητικές Επιστήμες, Εκδόσεις Broken Hill. <p>- Further reading:</p> <ul style="list-style-type: none">• Σ. Κώτσιος, Ασκήσεις Μαθηματικών για Οικονομολόγους, Α, Εκδόσεις Κριτική.• Α. Ξεπαπαδέας, Ι. Γιαννίκος, Μαθηματικές μέθοδοι στα οικονομικά, Α, Εκδόσεις Gutenberg.• Γ. Σαραφόπουλος, Ν. Μυλωνάς, Μαθηματικά Οικονομικών Επιστημών, Εκδόσεις Τζιόλα.• Ε. Φούντας, Α. Σαπουνάκης, Ανάλυση και Εφαρμογές 2, Εκδόσεις Βαρβαρήγου.• http://ocw.mit.edu/courses/mathematics/18-013a-calculus-with-applications-spring-2005/• R.L. Finney, M.D. Weir, F.R. Giordano, Calculus for Engineers and Scientists II, AddisonWesley.• K. Sydsaeter, A. Storm, P. Berck, Economists' Mathematical Manual, Springer-Verlag.• M. Spivak, Calculus, Publish or Perish	