

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	Faculty of Social, Political and Economic Sciences		
<b>ACADEMIC UNIT</b>	Department of Economics		
<b>LEVEL OF STUDIES</b>	Undergraduate		
<b>COURSE CODE</b>	NK23	<b>SEMESTER</b>	2
<b>COURSE TITLE</b>	Mathematics II		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
Lectures	6	6	
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	Core		
<b>PREREQUISITE COURSES:</b>			
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>	<a href="http://www.econ.duth.gr/undergraduate/lessons/b2.shtml">http://www.econ.duth.gr/undergraduate/lessons/b2.shtml</a>		

## (2) LEARNING OUTCOMES

### Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

The course consists of two parts:

- I. Introduction to Linear Algebra
- II. Differential Calculus and Optimization of multivariable functions.

Emphasis is placed on understanding and use of mathematics in economic theory. Upon successful completion of the course the student / her will be able to:

- ✓ Understands concepts of economic theory using mathematical methods.
- ✓ To use mathematical methods in economics (modeling using these methods)
- ✓ To analyze and synthesize data.
- ✓ To use various ways of thinking (eg inductive, productive).
- ✓ To develop different problem solving strategies.

### General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	Project planning and management
Adapting to new situations	Respect for difference and multiculturalism
Decision-making	Respect for the natural environment
Working independently	Showing social, professional and ethical responsibility and sensitivity to gender issues
Team work	Criticism and self-criticism
Working in an international environment	Production of free, creative and inductive thinking
Working in an interdisciplinary environment	.....
Production of new research ideas	Others...
	.....

- Production of free, creative and inductive thinking
- Analysis and synthesis of data and information
- Decision-making
- Working independently

## (3) SYLLABUS

The course consists of two parts:

- I. Introduction to Linear Algebra. Economic applications
- II. Differential Calculus and Optimization of multivariable functions. Economic applications

## (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Lectures in auditorium
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<p><b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>  <i>Use of ICT in teaching, laboratory education, communication with students</i></p>	<ul style="list-style-type: none"> <li>• Use of mathematical package (Mathematica)</li> <li>• Support of the learning process via e-class</li> </ul>	
<p><b>TEACHING METHODS</b>  <i>The manner and methods of teaching are described in detail.</i>  <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i></p> <p><i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i></p>	<p><i>Activity</i></p>	<p><i>Semester workload</i></p>
	Lectures	78
	Study	78
	Individual written work	24
Course total	180 (30 hours per Credit Unit)	
<p><b>STUDENT PERFORMANCE EVALUATION</b>  <i>Description of the evaluation procedure</i></p> <p><i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i></p> <p><i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i></p>	<ul style="list-style-type: none"> <li>• <b>Written examination</b> (written examination includes questions of various types (multiple choice questionnaires, short-answer questions, open-ended questions, problem solving)</li> <li>• <b>Individual written work</b> (exercises of economic applications). The essay prepares the student for the written exam and takes account (bonus to 1 Unit.) only if the level of the student in the written exam is greater than or equal to 5.</li> </ul>	

## (5) ATTACHED BIBLIOGRAPHY

<ul style="list-style-type: none"> <li>✓ Γ. Σαραφόπουλος, Ν. Μυλωνάς. <i>Γραμμική Άλγεβρα, Βελτιστοποίηση και Δυναμική Ανάλυση για Οικονομολόγους</i>. Εκδόσεις Τζιόλα, Θεσ/νίκη 2016</li> <li>✓ Μ. Λουκάκης, <i>Πρόσκληση στα μαθηματικά οικονομικών και διοικητικών επιστημών Τόμος Β'.</i> Εκδόσεις Σοφία, Θεσ/νίκη, 2011</li> <li>✓ Hoy Michael-Livernois John-McKenna Chris-Stengos Thanasis-Κυρίτσης Ιωάννης(επιμ.), <i>Μαθηματικά οικονομικών επιστημών</i>, Εκδόσεις Δαρδανός, Αθήνα, 2012</li> </ul>
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