COURSE OUTLINE

(1) GENERAL INFORMATION

FACULTY / SCHOOL	MARITIME AND INDUSTRIAL STUDIES		
DEPARTMENT	MARITIME STUDIES		
LEVEL OF STUDY	UNDERGRADUATE		
COURSE UNIT CODE	NA102B	**SEMESTER**	1st
COURSE TITLE	Mathematics for Economics and Business		
INSTRUCTOR'S NAME	Assistant Professor Vangelis Tsioumas		

INDEPENDENT TEACHING ACTIVITIES *in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits*	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	6
Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4		

COURSE TYPE *Background knowledge, Scientific expertise, General knowledge, Skills development,*	Background knowledge
PREREQUISITE COURSES:	
LANGUAGE OF INTRODUCTION:	Greek
LANGUAGE OF EXAMINATION/ASSESSMENT:	
THE COURSE IS OFFERED TO ERASMUS STUDENTS:	Yes
COURSE WEBSITE (URL):	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.

It is necessary to consult:

APPENDIX A

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

APPENDIX B

- *Guidelines for writing Learning Outcomes*

Upon successful completion of this course, the students should be able to:

- Understand and analyze the basic concepts of Mathematics for Economics and Business.
- Apply analytical tools and mathematical techniques to analyze and solve problems in economics, management, and shipping.
- Use mathematical models to analyze and interpret economic data.
- Demonstrate a solid understanding of fundamental concepts in differential and integral calculus, as well as their applications in economics and business.
- Apply mathematical concepts and techniques to analyze financial processes and support decision-making.

General Competences

Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?

Search for, analysis and synthesis of data and information by the use of appropriate technologies,
Adapting to new situations
Decision-making
Individual/Independent work
Group/Team work
Working in an international environment
Working in an interdisciplinary environment
Introduction of innovative research
Project planning and management
Respect for diversity and multiculturalism
Environmental awareness
Social, professional and ethical responsibility and sensitivity to gender issues
Critical thinking
Development of free , creative and inductive thinking
……..
(Other……citizenship, spiritual freedom, social awareness, altruism, etc.)
……..

- Search for, analysis and synthesis of data and information by the use of appropriate technologies,
- Adapting to new situations
- Decision-making
- Individual/Independent work
- Group/Team work
- Working in an international environment
- Critical thinking
- Development of creative and inductive thinking

(3) COURSE CONTENT

- Demand, supply, and equilibrium
- Cost, revenue, and break-even point
- Elasticity of demand and supply
- Non-linear functions and applications
- Derivatives and applications
- Functions of multiple variables
- Partial derivatives and economic applications
- Optimization and Lagrange multipliers
- Integrals and applications
- Consumer and Producer surplus
- Differential equations and economic applications
- Simple and compound interest (compounding)
- Present value, discounting, and annuities
- Investment evaluation
- Matrices and determinants
- Solving linear systems using the following approaches: inverse matrix, Gauss elimination method, and Cramer’s rule

(4) TEACHING METHODS – ASSESSMENT

<table>
<tr><td>MODES OF DELIVERY
Face-to-face, in-class lecturing, distance teaching and distance learning, etc.</td><td colspan="2">Face-to-face, in-class lecturing</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY
Use of ICT in teaching, Laboratory Education, Communication with Students</td><td colspan="2">• E-class
• PowerPoint, Excel, Word</td></tr>
<tr><td>COURSE DESIGN
Description of teaching techniques, practices and methods:
Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity etc.

The study hours for each learning activity as well</td><td>Activity/Method</td><td>Semester workload</td></tr>
<tr><td></td><td>Lectures</td><td>52</td></tr>
<tr><td></td><td>Non-guided study</td><td>98</td></tr>
<tr><td></td><td>Total</td><td>150</td></tr>
</table>

as the hours of self-study are given following the principles of ECTS.		
STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS *Detailed description of the evaluation procedures:* *Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other….,etc.* *Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students*	• Final exam • Group project	

(5) SUGGESTED BIBLIOGRAPHY

MAIN TEXTBOOK
Τσιούμας Ε., «Μαθηματικά για Οικονομική Ανάλυση και Διοίκηση», Broken Hill Publishers Ltd

OTHER RECOMMENDED BOOKS
- Φιλιππάκης Μ., 'Εφαρμοσμένη Ανάλυση και στοιχεία γραμμικής 'Αλγεβρας', Εκδόσεις ΤΣΟΤΡΑΣ
- Bradley T., «Μαθηματικά», Εκδόσεις Κριτική
-

RELEVANT JOURNALS
- Journal of Econometrics
- Journal of Mathematical Economics
- Transportation Research Parts A-E
- Maritime Economics and Logistics