COURSE OUTLINE

1. GENERAL

SCHOOL	NATURAL SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVELOF COURSE	UNDERGRADUATE		
COURSE CODE	MAT_DI465	**SEMESTER OF STUDIES**	8th
COURSE TITLE	NATURAL LANGUAGES AND MATHEMATICAL REASONING		

INDEPENDENT TEACHING ACTIVITIES *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*	**TEACHING HOURS PER WEEK**	**ECTS CREDITS**
Lectures and Tutorials	4	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	Elective course
PREREQUISITE COURSES:	Recommended prerequisite knowledge: MATHEMATICAL LOGIC, SET THEORY, HISTORY OF MATHEMATICS
TEACHING AND ASSESSMENT LANGUAGE:	Greek
THE COURSE IS OFFERED TO ERASMUS STUDENTS	No
COURSE WEBPAGE (URL)	

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 generally aims at:

- Cultivating the ability to quickly and correctly understand a mathematical text as well as to correctly formulate the formal mathematical language.
- Cultivating the understanding and correct manipulation of the logical elements of mathematical language as they were expressed in the Greek mathematical language.
- Cultivating the understanding of the logical and syntactical structure of the special phrases of the mathematical language (definition, proposition, proof of theorem, axiom, problem, exercise, etc.) when the vocabulary is non-formal, and cultivation of the ability to use formal language.
- Cultivating the ability to use and control arguments and the ability of logic and linguistic analysis of Greek mathematical texts.

General Abilities

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	*Others…*
Production of new research ideas	

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Adaptation to new situations.
- Autonomous work.
- Teamwork.
- Promoting free, creative and inductive thinking.

3. COURSE CONTENT

This course grew out of considerations in Mathematical Logic and in modern Linguistics.
Formal languages. Examples of first-order languages with equality. The evolution of Greek mathematical language, Euclid's version. The structure of modern Greek mathematical language. The logical symbols of natural language. Predicates in natural language, free and bound occurrence of a variable. The taxonomy of mathematical expressions. The Linguistic levels of mathematical language. Logic and linguistic analysis of Greek mathematical texts.

4. TEACHING AND LEARNING METHODS - ASSESSMENT

TEACHINGMETHOD *Face-to-face, Distance learning, etc.*	Lectures (face to face)
USEOFINFORMATIONANDCOMMUNICATIONTECHNOLOGIES *Use of ICT in teaching, laboratory education, communication with students*	
TEACHINGORGANIZATION *The manner and methods of teaching are described in detail.* *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.* *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*	

Activity	***Semester workload***
Lectures	26
Tutorials	26
Solving suggested exercises	45
Hours of personal study by the student	50
Final examination	3
Total number of hours for the Course (25 hours of work-load per ECTS credit)	***150***

STUDENTASSESSEMNT *Description of the evaluation procedure* *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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students*	**Assessment Language:** Greek **Assessment Language for Erasmus students: ---** **Assessment methods** ✓ Granted their successful assesment via a writen exam, students may elect to choose a project, either indipendently or in groups of two, and publicly present it. The subject is decided after discussion with the Proffessor (usually logical and linguistic analysis of a mathematical texts). ✓ Formal Examination. Minimum passing grade: 5 Maximum passing grade: 10

5. RECOMMENDED LITERATURE

(*in Greek*)

- Παπαδοπετράκης Ευτύχης. *Φυσικές Γλώσσες και Μαθηματικός Λόγος.* Σημειώσεις μαθήματος, 2012.

(*in English*)

- Partee Barbara H., ter Meulen Alice and Wall Rober E. *Mathematical Methods in Linguistics*. Kluwer Academic, 1990.
- Exner Robert M. and Rosskopf Myron F. *Logic in Elementary Mathematics*. McGraw-Hill, 1959.
- Lacombe Daniel. *Coures de Logique élémentaire.* Polycopié, Université Paris VII, 1978.
- Gamut L. T. F. *Logic, Language, and Meaning.* The University of Chicago Press, 1991.