■ CE84 - Mathematical Logic

GENERAL

SCHOOL	EXACT SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CE84	**SEMESTER**	H
COURSE TITLE	MATHEMATICAL LOGIC		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	4	6

COURSE TYPE	Scientific Field
PREREQUISITE COURSES	Set Theory
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://eclass.uowm.gr/

LEARNING OUTCOMES

Learning Outcomes
With the successful attendance of the course the students: • will learn the basic language of Propositional Calculus like propositions and connections, • will be able to check the truth values of a proposition, the tautology/contradiction and the equivalence of propositions, • will learn the regular forms, • will study proofs in the view of typical systems,

- will understand basic theorems of Compactness, Validity and Completeness in Propositional Logic,
- will learn the meaning of Boole Algebra and its applications,
- will be able to use the language of Categorical Logic,
- will understand basic theorems of Compactness, Validity and Completeness in Categorical Logic.

General Competencies

- Search for, analysis and synthesis of data and information, with the use of the necessary technology.
- Working independently for the enhancement of their self-esteem.
- Creation of new research ideas.
- Production of free, creative and inductive thinking, which is based on mathematical processes.

CONTENT OF THE COURSE

- The language of Propositional Logic, the truth values of propositions, corresponding truth-matrices, tautologies, contradictions, logic equivalence of propositions.
- Adequacy of logic connections, regular forms.
- Systems of typical proofs.
- Logic circuits, Algebra Boole.
- The language of Categorical Logic.
- The theorems of Compactness, Validity and Completeness in Categorical Logic.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Use of e-class. Communication through face-to-face discussions and e-mails.
TEACHING ORGANIZATION	

Activity	**Semester Workload**
Lectures	52 hours
Individual Study	98 hours
Course Total (25 hours per ECTS)	150 hours

STUDENT	Written final examination 100%.

EVALUATION	

RECOMMENDED BIBLIOGRAPHY

1. Margaris A. I., Introduction to Mathematical Logic, Publications Tziola, 2017 (Greek).
2. Tzouvaras Ath., Elements of Mathematical Logic, Publications Ziti, 1998 (Greek).
3. Georgiou D., Iliadis S., Set Theory, second edition, Publications Tziola, 2017 (Greek).
4. Cornelia Kalfa, Axiomatic Set Theory, Zetis Publications, 1990.
5. Enderton Herbert B., A Mathematical introduction to Logic, University Publications Crete, 2013 (Greek).