■ CC42 - Real Analysis

GENERAL

SCHOOL	EXACT SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CC42	**SEMESTER**	D
COURSE TITLE	REAL ANALYSIS		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**ECTS**
Lectures	5	7

COURSE TYPE	Scientific Field
PREREQUISITE COURSES	Infinitesimal Calculus I-II
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 this course students will be introduced to the topology of metric spaces. Upon completion of the course, students: • Will be familiar with the concepts of open and closed sets • They will recognize the basic topological properties of metric spaces • They will be able to use the nested sets and Baire theorems. • They will have an understanding of the concept of topological space.
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

Euclidean spaces. Open and closed sets. Interior, exterior, boundary, closure of a set. Metric spaces, examples. Equivalent metrics, convergence and continuity. Complete metric spaces, Cauchy sequences, complete metric spaces. Nested sets theorem, Baire's theorem. Compactness and connectedness, properties and examples. Introduction to topological spaces.

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	
STUDENT EVALUATION	Written final examination 100%.

Activity	**Semester Workload**
Lectures	65 hours
Individual Study	110 hours
Course Total (25 hours per ECTS)	175 hours

RECOMMENDED BIBLIOGRAPHY

1. Topology, P. Tsamatos. Tziola Publ. 2016.
2. Topology of Metric Spaces, Th. Kyventidis. Ziti Publ. 2009.
3. Introduction to Topology, Ch. Karioffilis and Ch. Konstadilaki. Kyriakidis Publ. 2017.