COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE PROGRAM		
COURSE CODE		**SEMESTER**	**H**
COURSE TITLE	FUNCTIONAL ANALYSIS		
INSTRUCTOR			

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
	4	6

COURSE TYPE	Special background
PREREQUISITE COURSES:	NO
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs

(2) LEARNING OUTCOMES

Learning outcomes
The purpose of the course is to introduce the student to a classical tool of Mathematical Analysis. The principal notions studied are: Banach and Hilbert spaces, as well as their basic properties; Linear operators and dual spaces; Weak topologies. Moreover, the four cornerstone theorems of Functional Analysis are presented and proved: Hahn-Banach, Banach-Steinhaus, Open Mapping, Closed Graph. The student will be also prepared for some applications of Functional Analysis to other areas via spectral theory.
General Competences
Working independently. Team work. Working in an interdisciplinary environment.

(3) SYLLABUS

Banach Spaces, Examples the spaces L_p, l_p, C(X). Hilbert Spaces, Geometry of Hilbert Spaces, Linear Operators, The Hahn-Banach Theorem, Duality. Weak topologies and Alaoglou' s theorem. The open mapping theorem and the closed graph theorem. Applications.

TEACHING MATERIAL DISTRIBUTION	The teaching material of the course is uniformly distributed during the semester.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Communication with students via e-mail
TEACHING METHODS	

Activity	***Semester workload***
Lectures	52
Independent study	98
Course total (25 per ECTS)	***150***

COURSE COMMITMENTS	Attending course is not obligatory.

STUDENT PERFORMANCE EVALUATION	Student's evaluation is done in Greek through a written examination which includes short-answers questions and problem solving. For students with disabilities, evaluation takes place via oral exam.

(5) ATTACHED BIBLIOGRAPHY

1. Yuli Eidelman, Vitali Milman, Antonis Tsolomitis, *Functional Analysis An Introduction,* Graduate Studies in Mathematics Volume 66, American Mathematical Society Providence, Rhode Island.