

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF SCIENCES		
ACADEMIC UNIT	DEPARTMENT OF MATHEMATICS		
LEVEL OF STUDIES	POSTGRADUATE Studies in Mathematics		
COURSE CODE	B5	SEMESTER	B
COURSE TITLE	PARTIAL DIFFERENTIAL EQUATIONS		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	CREDITS	
	3	10	
COURSE TYPE	SPECIALISED GENERAL KNOWLEDGE		
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
On completion of this module, students should be able to: a) use the method of characteristics to solve 1st-order hyperbolic equations; b) classify a second order PDE as elliptic, parabolic or hyperbolic; c) use Green's functions to solve elliptic equations; d) have a basic understanding of diffusion; e) use separation of variables to solve linear PDEs
General Competences
Working independently Team work Working in an interdisciplinary environment

(3) SYLLABUS

Introduction and basic concepts. Linear, semi-linear, and quasi-linear first order differential equations. The Cauchy problem and its solution using the method of characteristics. Linear partial differential equations of second order: classification, examples, initial/boundary conditions, reduction to normal/canonical form. Initial and boundary value problems for the wave and the heat equations. Boundary value problem for Laplace's and Poisson's equations. The Cauchy problem for the wave and the heat equations.
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(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	<ul style="list-style-type: none"> • Communication with students via e-mail • Uploading course material on moodle system 	
TEACHING METHODS	<i>Activity</i>	<i>Semester workload</i>
	Lectures	39
	Independent study	148.5

	Assignments	62.5
	Course total (25 per ECTS)	250
STUDENT PERFORMANCE EVALUATION	<p>Student evaluation is done in Greek through a written examination which includes short-answer equations and problem solving.</p> <p>For students with disabilities, evaluation takes place via oral exams.</p>	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. P. Prasad & R. Ravindran, «Partial Differential Equations», Wiley Eastern, 1985.
2. W. E. Williams, «Partial Differential Equations», Oxford University Press, 1980.
3. P. R. Garabedian, «Partial Differential Equations», Wiley, 1964.

- Related academic journals: [Journal of Differential Equations](#), [Communications in Partial Differential Equations](#).