

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOOL</b>	SCHOOL OF SCIENCES		
<b>ACADEMIC UNIT</b>	DEPARTMENT OF MATHEMATICS		
<b>LEVEL OF STUDIES</b>	UNDERGRADUATE PROGRAM		
<b>COURSE CODE</b>		<b>SEMESTER</b>	<b>G</b>
<b>COURSE TITLE</b>	PARTIAL DIFFERENTIAL EQUATIONS		
<b>INSTRUCTOR</b>			
<b>INDEPENDENT TEACHING ACTIVITIES</b>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	6	
<b>COURSE TYPE</b>	Special background		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS:</b>	GREEK		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	YES		
<b>COURSE WEBSITE (URL)</b>	<a href="http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs">http://www.math.aegean.gr/index.php/en/academics/undergraduate-programs</a>		

### (2) LEARNING OUTCOMES

<b>Learning outcomes</b>
At the end of the semester the students will be able to distinguish between the three basic types of second order linear partial differential equations and will have seen their origin from Physics and other sciences. Furthermore, he/she will be able to solve them in special cases by applying particular methods and techniques.
<b>General Competences</b>
Working independently.

### (3) SYLLABUS

Basic concepts. Linear second order equations with two independent variables: classification (hyperbolic, parabolic, elliptic); examples (wave equation, heat equation, Laplace equation). The Cauchy problem for the wave equation in one space dimension. Initial-value and boundary-value problems for the wave equation and the heat equation in one and two space dimensions (separation of variables, Sturm-Liouville problem, Fourier series). Boundary-value problems for the Laplace equation in two and three space dimensions. The Cauchy problem for the heat equation in one space dimension (Fourier transform).	
<b>TEACHING MATERIAL DISTRIBUTION</b>	The teaching material of the course is uniformly distributed during the semester.

### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b>	Face-to-face	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b>	Communication with students via e-mail	
<b>TEACHING METHODS</b>	<b>Activity</b>	<b>Semester workload</b>
	Lectures	52
	Independent study	98

	Course total (25 per ECTS)	<b>150</b>
<b>COURSE COMMITMENTS</b>	Attending course is not obligatory.	
<b>STUDENT PERFORMANCE EVALUATION</b>	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 exams.	

**(5) ATTACHED BIBLIOGRAPHY**

1. G. Akrivis, N. Alikakos, Partial Differential Equations, (in Greek).
2. H. F. Weinberger, A First Course in Partial Differential Equations, Dover, 1995
3. N. Stavrakakis, Partial Differential Equations, 2013 (in Greek).