

Fatih University  
Faculty of Arts and Sciences  
Department of Mathematics

MATH 605  
**ADVANCED PARTIAL DIFFERENTIAL EQUATIONS**  
SPRING 2012/13

INSTRUCTOR: Prof. Allaberen Ashyralyev

Office: Fatih University, A-322 E-mail: aashyr@fatih.edu.tr

Office Hours: Monday: 11:00-12:00

TIMETABLE: Every Monday 8:00-11:00 am between February 11,2013-May 17,2013

CONTACT:

ASSESSMENT:

PRE-REQUISITES: Math 271(Differential Equations-Undergraduate level) and MATH 272 (Boundary Value Problems-Undergraduate level)

Course Objectives: Canonical Forms of Second Order Differential Equations. Fourier Seris Solutions, Fourier Transform solutions and Laplace Transform Solutions of PDE. The Riemann function method. Approximate solutions. Operator method. Finite difference method.

PRINCIPAL TEXTBOOK:

PROGRAMME	
WEEKS	SUBJECTS TO BE COVERED
1	Canonical Forms of Second Order Partial Differential Equations
2 & 3	Fourier Seris Solution of Partial Differential Equations
4 & 5	Fourier Transform Solution of Partial Differential Equations
6 & 7	Laplace Transform Solution of Partial Differential Equations
8	<b>Mid-term Exam</b>
9 & 10	Operator Method for Partial Differential Equations
11	Iteration method for Partial Differential Equations
12	Riemann function method for Partial Differential Equations
13 & 14	Finite difference method for Partial Differential Equations
<b>Will be announced</b>	<b>Final Examination</b>

SUGGESTED READING:

1. Shepley L.Ross. Differential Equations.John Wiley & Sons, Inc.New York,1984, 807 p.
2. Erwin Kreyszig,Advanced Engineering Mathematics,John Wiley & Sons,New York,1993.
- 3.Ashyralyev A. and Sobolevskii P.E. Well-Posedness of Parabolic Difference Equations. Birkhauser Verlag: Basel. Boston. Berlin, 1994, 349 p.
4. Stanley J. Farlow. Partial Differential Equations for Scientists and Engineers (Dover Books on Advanced Mathematics)

**Grading Policy**

Midterm Exam: 40 %, Homework 20%, Final Exam: 40 %

**Attendance**

Classroom and laboratory attendance are mandatory. Students, who are absent over 30% of the class time automatically fail the course.