King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

SYLLABUS

Semester II, 2008-2009 (081)

(Dr. Kassem Mustapha)

Course #: **Math 513**
Title: Mathematical Methods for Engineers
Textbook: Advanced Engineering Mathematics with MatLab, Dean G. Duffy, 2nd Edition 2003

Objective: This course aims to introduce some necessary concepts of Engineering Mathematical Methods such as Fourier and Laplace transforms, Sturm-Liouville problems, basic PDE's, and some matrix theory.

Outcomes: By the end of this course, the student should be able to

- perform the Fourier and Laplace transforms of some commonly used functions
- solve the basic linear Laplace, wave, and heat equations and Sturm_liouville problems
- do some Matrix computations
- use Matlab to perform some calculations.

Week	Chapters	Material	Homework
1-2	4	Fourier Series	4.1.4, 4.1.14, 4.2.1, 4.3.7, 4.3.12, 4.4.3, 4.5.4, 4.6.5
3-4	5	The Fourier Transform	5.1.2, 5.1.7, 5.3.2, 5.3.4, 5.4.2, 5.4.10, 5.5.3, 5.6.2
5-6	6	The Laplace Transform	6.2.10, 6.3.41, 6.4.2, 6.5.4, 6.6.10, 6.7.6, 6.8.22, 6.8.28
7-8	9	The Sturm-Liouville Problem	9.1.13, 9.2.3, 9.3.3
Midterm Break: April 25-May 1st, 2009			
9-10	10	The Wave Equation	10.3.8, 10.5.2
11	11	The Heat Equation	11.3.13, 11.4.5, 11.4.8, 11.5.3
12	12	The Laplace Equation	12.3.5, 12.3.11, 12.3.23, 12.6.2
13-14	14	Linear Algebra	14.2.9, 14.3.3, 14.4.11, 14.6.14
15		Catch up and Review	

Grading policy: Homework 30, %, Midterm exam 35 %, Final Exam 35 %

Office hours: Saturday and Monday from 4:00 PM to 5:00 PM

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