

# King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

## SYLLABUS

Semester I, 2013-2014 (132)

(Dr. Muhammad Yousuf)

- Course #:** Math 513  
**Title:** Mathematical Methods for Engineers  
**Textbook:** Advanced Engineering Mathematics with MatLab, Dean G. Duffy, 3<sup>rd</sup> Edition  
**Extra**  
**References**
- Beginning Partial Differential Equations, P. V. O'Neil.
  - Advanced Engineering Mathematics by Zill and Wright.

**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
- solving and computing solutions to systems of linear equations
- using Matlab to solve computational problems

Week	Chapters	Material
1-2	4	Fourier Series
3-4	5	The Fourier Transform
5-6	6	The Laplace Transform
7-8	9	The Sturm-Liouville Problem
9-10	10	The Wave Equation
11	11	The Heat Equation
12	12	The Laplace Equation
13-14	14	Linear Algebra
15		Catch up and Review

**Grading Policy:** Project, Homework and Quizzes 30%, Midterm 30%, Final 40%

NOTE: Homework Assignments for each section will be assigned during the semester.

### Teaching Schedule

Day/Time	02:10-03:00	03:30-04:30	05:00-06:15
Sunday(U)	Math 301-04 Room: 59-1009	Office Hour R: 5-403	Math 513-01 Room: 59-1014
Tuesday(T)	Math 301-04 Room: 59-1009	Office Hour R: 5-403	Math 513-01 Room: 59-1014
Thursday(R)	Math 301-04 Room: 59-1009	Office Hour R: 5-403	

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