Department of Mathematical Sciences, KFUPM

Math 513 Syllabus (061)

Dr. K. M. Furati

Course Title: Mathematical Methods for Engineers

Textbook: Advanced Engineering Mathematics with Matlab, Dean G. Duffy, 2nd Ed, 2003.

Course Description: Laplace transforms including the convolution theorem, error and gamma functions. The method of Frobenius for series solutions to differential equations. Fourier series, Fourier-Bessel series and boundary value problems, Sturm-Liouville theory. Partial differential equations: separation of variable and Laplace transform and Fourier integrals methods. The heat equation. Laplace equation, and wave equation. Eigenvalue problems for matrices, diagonalization.

Wk	Date	Chapter	Topic
1	Sep 9 – 11, Th 14	4	Fourier Series
2	Sep 16 – 18		
National Holiday: Sat, Sep 23.			
3	Sep 25	5	The Fourier Transform
4	Sep 30 – Oct 2		
5	Oct 7 – 9	6	The Laplace Transform
Eid Vacation			
6	Oct 28 – 30	6	The Laplace Transform
7	Nov 4 – 6	9	The Sturm-Liouville Problem
8	Nov 11 – 13		
9	Nov 18 – 20	10	The Wave Equation
10	Nov 25 – 27		
11	Dec 2 – 4	11	The Heat Equation
12	Dec 9 – 11	12	Laplace's Equation
13	Dec 16 – 18		
Eid Vacation			
14	Jan 6 – 8	14	Linear Algebra
15	Jan 13 – 15	---	Review