

## Math 513 Syllabus (071)

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 08 – 12	4	Fourier Series
2	Sep 15 – 19		
3	Sep 22 – 26	5	The Fourier Transform
4	Sep 29 – Oct 03		
<i>Eid Vacation</i>			
5	Oct 20 – 24	6	The Laplace Transform
6	Oct 27 – 31		
7	Nov 03 – 07	9	The Sturm-Liouville Problem
8	Nov 10 – 14		
9	Nov 17 – 21	10	The Wave Equation
10	Nov 24 – 28		
11	Dec 01 – 05	11	The Heat Equation
12	Dec 08 – 12		
		12	Laplace Equation
<i>Eid Vacation</i>			
13	Dec 29 – Jan 02	12	Laplace Equation
14	Jan 05 – 09	14	Linear Algebra
15	Jan 12 – 16	---	Project Presentations
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