

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematical Sciences**  
**SYLLABUS**  
**Semester II-2005-2006 (051)**  
**(Dr. Ashfaque H. Bokhari)**

**Course #**    **Math 301**  
**Title**        **Methods of Applied Mathematics**  
**Textbook**    **Advanced Engineering Mathematics by Zill and Cullen (Second Edition, 1999) Jones and Barlett Publishers.**

<b>Wk</b>	<b>Date</b>	<b>Sec.</b>	<b>Material</b>	<b>Homework</b>
1	Sept 10 - 14	9.1 9.5 9.7	Vector Functions The Directional Derivative Divergence and Curl	6,10,17,26,38,41,45 1,6,10,17,22,30 2,6,14,22,28
2	Sept 17-21	9.8 9.9	Line Integrals Line Integrals Independent of the Path	2,8,12,16,34 1,4,15,21,24,26
3	Sept 26-28	9.12 9.13	Green's Theorem Surface Integrals	1,4,6,18,24 3,5,10,28,34
4	Oct 01-05	9.14 9.16	Stokes' Theorem Divergence Theorem	2,3,6,8,16 1,4,8,11
5	Oct 08-12	4.1 4.2	Definition of the Laplace transform Inverse Transform, Transforms of Derivatives	2,5,14,26,30,38,40(b) 1,10,18,19,32,36
<b>Monday, October 10, Major Exam # 1</b>				
6	Oct 15-19	4.3 4.4 4.5	Translation Theorems Additional Properties Dirac Delta Function	6,13,20,24,37,48,63 2,10,16,22,38,46 1,4,8,12
7	Oct 22-26	12.1 12.2	Orthogonal Functions Fourier Series	3,6,11,14,21 2,6,11,20
<b><i>Eid Al-Fitr Break: Oct. 27 - Nov. 11, 2005</i></b>				
8	Nov.12- 16	12.3 12.4	Fourier Cosine and Sine Series Complex Fourier Series	1,8,12,16,25,36 3,6,11
9	Nov 19- 23	12.5	Sturm-Liouville Theorem	2,4,6,12
10	Nov 26-30	12.6	Bessel and Legendre Series	2,4,6,8,15,20
11	Dec 03 - 07	13.1 13.3	Separable Partial Differential Equation Heat Equation	1,8,13,16,20,26,28 2,3,6,8,9
<b>Wednesday, December 07, Major Exam # 2</b>				
12	Dec 10-14	13.4 13.5	Wave Equation Laplace's Equation	2,4,8,10,16 1,4,7,10,14
13	Dec 17-21	14.2 14.3	Problems in Polar and Cylindrical Coordinates Problems in Spherical Coordinates	3,4,9,10 1,5,11,12
14	Dec 24-28	15.2	Applications of the Laplace Transform	2,4,8,10,14,28
15	Dec 31-Jan 04	15.3 15.4	Fourier Integral Theorem Fourier Transforms	1,5,10,18 2,6,10,12,16
<b><i>Eid Al-Adha Break: Jan.05 - Jan. 20, 2005</i></b>				
16	Jan 21		Revision and catching up	