

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics and Statistics**  
**SYLLABUS MATH 301**  
**Semester 113 (Summer 2012) Class: SUMTW. 09:20 – 10:20. Bldg 59, 1009.**

**Instructor: F.D. Zaman**

Course	Math 301			
Title	Methods of Applied Mathematics			
Textbook	Advanced Engineering Mathematics by Zill, Wright and Cullen (Fourth Edition, 2011).			
Bulletin Description	Special functions. Bessel's functions and Legendre polynomials. Vector analysis including vector fields, divergence, curl, line and surface integrals, Green's, Gauss' and Stokes' theorems. Systems of differential equations. Sturm-Liouville theory. Fourier series and transforms. Introduction to partial differential equations and boundary value problems.			
Week	Date	Sec.	Material	Homework
1	June 09 – 13	9.1 9.5 9.7 9.8	Vector Functions The Directional Derivative Divergence and Curl Line Integrals	3,11,20,25,28,41 6,9,13,21,30 8,14,23,30 5,10,16,22,30
2	June 16 – 20	9.9 9.12 9.13 9.14	Independent of the Path Green's Theorem Surface Integrals Stokes' Theorem	7,15,18,23,28 2,6,17,25 3,11,26,33 3,6,14,17
3	June 23 – 27	9.16 4.1 4.2 4.3	Divergence Theorem Definition of the Laplace transform Inverse Transform, Transforms of Derivatives Translation Theorems	2,4,11 3,5,17, 29,33,38 5,13,15,19,36 8,13,20,24, 47,66
<b>First Major Exam Saturday, June 30, 2012</b>				
4	June 30 – July 04	4.4 4.5 12.1 12.2	Additional Properties Dirac Delta Function Orthogonal Functions Fourier Series	5,16,23,34, 45 4,8,12 6,12,16,18 4,6,16,20
5	July 07 – 11	12.3 12.5 12.6	Fourier Cosine and Sine Series Sturm-Liouville Theorem Bessel and Legendre Series	4,6,14,16,26,38 2,4,6,8,14 2,4,6,8,10,20
6	July 14 – 18	13.1 13.3 13.4 13.5	Separable PDE Heat Equation Wave Equation Laplace's Equation	2,10,14,20,24,28 2,4,6 2,4,6,8,10 2,4,8,10,14
<b>Second Major Exam Saturday, July 21, 2010</b>				
7	July 21 – 25	14.2 14.3 15.2	Problems in Polar and Cylindrical Coordinates Problems in Spherical Coordinates Applications of the Laplace Transform	2,4,8,10 4,6,12 6,8,10,14,27
8	July 28 – 30	15.4	Fourier Transforms	6,10,12,16,18
<b>Final Exam Comprehensive Tuesday July 31, 2012 at 08:30 AM</b>				

**Important Dates**

June 16	Last day for dropping course(s) without permanent record
July 04	Last day for dropping course(s) with grade of "W" thru <a href="http://regweb.kfupm.edu.sa">http://regweb.kfupm.edu.sa</a>
July 11	Last day for withdrawal from all courses with grade of "W" thru the Registrar Office
July 25	Last day for withdrawal from all courses with grade of "WP/WF" thru the Registrar Office

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**webpage** <http://faculty.kfupm.edu.sa/math/fzaman/>    **Office Hours:** 11:35 – 12:35 PM

**Grading Policy:** Two Majors each 25%; Quizzes 10%; HW 3%; Attend. 2 %; Final 35%