King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
SYLLABUS Term-143
Coordinator: Dr. Faisal A. Fairag

Course #: MATH 301
Title: Methods of Applied Mathematics
Textbook: Advanced Engineering Mathematics by Zill and Wright (Fifth Edition)
Catalogue 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. Sturm-Liouville theory. Laplace transforms. Fourier series and transforms. Introduction to partial differential equations and boundary value problems in rectangular, cylindrical and spherical coordinates.

Week	Date	Sec.	Topics	Suggested Homework Problems
1	June 7 – 11	9.1	Vector Functions	1,12,16,17,21,26,33, 41
		9.5	The Directional Derivative	2,7,9,14,17,21,23,32,29
		9.7	Curl and Divergence	2,6,10,14,1722,27
		9.8	Line Integrals	2,6,8,11,16,19,24,28,33
2	June 14 –18	9.9	Independence of the Path	1,10,15,18,21,26
		9.12	Green's Theorem	2,4,6,9,18,23,25
		9.13	Surface Integrals	2,5,10,13,18,22,25,33
		9.14	Stokes' Theorem	1,3,6,8,13,17
Exam I : Sunday 21 June, after Taraweeh prayer				
3	June 21 –25	9.16	Divergence Theorem	2,4,7,11,14
		4.1	Definition of the Laplace transform	1,5,14,26,30,37,43
		4.2	Inverse Transform, Transforms of Derivatives	2,10,19,22,24,32,35
		4.3	Translation Theorems	2,8,13,20,24,31,37,48,55,63
4	June 28 – July 2	4.4	Additional Operational Properties	1,10,16,22,27,31,38,46
		4.5	The Dirac Delta Function	1,4,8,12
		12.1	Orthogonal Functions	2,6,11,13
		12.2	Fourier Series	1,6,12,17,20
Exam 2 : Monday 6 July, after Taraweeh prayer				
5	July 5 –9	12.3	Fourier Cosine and Sine Series	1,8,12,16,25,35,38
		12.5	Sturm-Liouville Theorem	2,4,6,12
Ramadhan Break : 10 – 25 July				
6	July 26 –30	12.6	Bessel and Legendre Series	2,4,6,8,15,20
		13.1	Separable Partial Differential Equations	2,8,12,16,22,26,27
		13.3	Heat Equation	2,3,6
		13.4	Wave Equation	1,6,9,16,23
Exam 3 : Sunday 2 August				
7	August 2 –6	13.5	Lap lace's Equation	2,4,7,10,14
		14.2	Problems in Cylindrical Coordinates	2,4,9,12
		14.3	Problems in Spherical Coordinates	2,5,11,12
		15.2	Applications of the Laplace Transform	2,4, 10,14,18,24
8	Aug. 9 –11	15.3	Fourier Integral	1,4,10
		15.4	Fourier Transforms	1,6,10,12,16
Final Exam : Thursday, August 13, 2015, 07:00 PM				

Grading Policy:

Exam I	15%		
Exam II	15%	Final Exam	30%
Exam III	15%	Class Work	25%

Attendance:
Attendance is compulsory. KFUPM policy with respect to attendance will be strictly enforced. Any student accumulating **9 unexcused absences** will be awarded DN Grade in the course.