

King Fahd University of Petroleum and Minerals  
Department of Mathematics and Statistics

**SYLLABUS**

Semester II: 2013(122)

**Coordinator:** Dr. Stephen Binns  
**Course #:** MATH 301  
**Title:** Methods of Applied Mathematics  
**Textbook:** Advanced Engineering Mathematics by Zill, Wright and Cullen (Fourth Edition, 2011)

Week	Date	Sec.	Topics	Suggested Homework Problems
1	Jan 26 – 30	9.1 9.5 9.7	Vector Functions Directional Derivative Divergence and Curl	1,12,16,17,21,26,33, 41 2,7,9,14,17,21,23,32,29 2,6,10,14,17,22,27
2	Feb 2 – 6	9.8 9.9	Line Integrals Line Integrals Independent of the Path	2,6,8,11,16,19,24,28,33 1,10,15,18,21,26
3	Feb 9 – 13	9.12 9.13	Green's Theorem Surface Integrals	2,4,6,9,18,23,25 2,5,10,13,18,22,25,33
4	Feb 16 – 20	9.14 9.16	Stokes' Theorem Divergence Theorem	1,3,6,8,13,17 2,4,7,11,14
5	Feb 23– 27	4.1 4.2	Definition of the Laplace transform Inverse Transform, Transforms of Derivatives	1,5,14,26,30,37,42(a) 2,10,19,22,24,32,35
<b>First Exam. Tuesday 26 Feb 7:00pm.</b>				
6	Mar 2 – 6	4.3 4.4 4.5	Translation Theorems Additional Properties The Dirac Delta Function	2,8,13,20,24,31,37,48,55,63 1,10,16,22,27,31,38,46 1,4,8,12
7	Mar 9 – 13	12.1 12.2	Orthogonal Functions Fourier Series	2,6,11,13 1,6,12,17,20
8	Mar 16-20	12.3	Fourier Cosine and Sine Series	1,8,12,16,25,35,38
<b>Midterm Vacation Vacation: Thu Mar23 – Fri Mar 29, 2013</b>				
9	Mar 30 –Apr 3	12.5	Sturm-Liouville Theorem	2,4,6,12
<b>Second Exam. Tuesday 9 April 7:00pm</b>				
10	Apr 6 – 10	12.6	Bessel and Legendre Series	2,4,6,8,15,20
11	Apr 13 – 17	13.1 13.3	Separable Partial Differential Equation Heat Equation	2,8,12,16,22,26,27 2,3,6
12	Apr 20 – 24	13.4 13.5	Wave Equation Laplace's Equation	1,3,6,10,17 2,4,7,10,14
13	Apr 27 – May 1	14.2 14.3	Problems in Polar and Cylindrical Coordinates Problems in Spherical Coordinates	2,4,9,12 2,5,11,12
14	May 4 – 8	15.2	Applications of the Laplace Transforms	2,4, 10,14,18,24
15	May 11 – 15	15.3 15.4	Fourier Integral Theorem Fourier Transforms	1,4,10 1,6,10,12,16
<b>Final Exam: Monday May 27, 2013 at 8:00am</b>				

## Policies

### Exams:

- Any student **missing a major exam** with or without excuse **will not be given a Make-Up Exam.**

However, a student missing an Exam with an official excuse from the “Deanship of Students Affairs” will be compensated according to the following policy.

**Exam Missed by the Student:** Grade to be compensated := ExM, Ave of Exam: AveM

**Exam taken by Student:** Grade obtained = ExT, Ave of Exam: Ave T

**Final Exam:** Grade obtained:= ExT, Ave of Exam: Ave F

$$\text{ExM} = \text{AveM} + [10(\text{ExT}-\text{AveT})+14(\text{ExT}-\text{AveF})]/24$$

- Class Work (60 Points = 15%):** The policy on the class work will be determined by your course instructor.
- Major 1 and 2 (100 Points = 25% each)**
- Final Exam (140 Points = 35%):** The exam will be comprehensive.

### 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.