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

Syllabus MATH260
Semester I, 2010-2011 (101)

Coordinator: Dr. Robert Heffernan

Course: Math 260 (Introduction to Differential Equations and Linear Algebra)
Textbook: *Differential Equations and Linear Algebra*
C. H. Edwards and D. E. Penny,
Prentice Hall, Second Edition (2005).
Objectives: This course introduces elementary differential equations and linear algebra to students of Computer Science, Computer Engineering, System Engineering and Earth Sciences.

Week	Date	§	Topic	Homework
1	25 Sep–29 Sep	1.1	Differential Equations & Mathematical Models	2, 12, 22, 30, 36, 40
		1.2	Integrals as General & Particular Solutions	4, 6, 15, 18
2	02 Oct–06 Oct	1.4	Separable Equations & Applications	1, 10, 24, 27, 33
		1.5	Linear First-Order Equations	
3	09 Oct–13 Oct	1.5	Linear First-Order Equations (contd.)	4, 12, 24, 28, 32
		1.6	Substitution Methods & Exact Equations	2, 10, 22, 40, 60
4	16 Oct–20 Oct	3.1	Introduction to Linear Systems	2, 22, 24, 26
		3.2	Matrices and Gaussian Elimination	4, 8, 14, 28
5	23 Oct–27 Oct	3.3	Reduced Row-Echelon Matrices	3, 10, 24, 35
		3.4	Matrix Operations	3, 10, 20, 24
			End of Exam I material	
Major Exam I: Tuesday November 2, 2010				
6	30 Oct–03 Nov	3.5	Inverse of Matrices	4, 12, 20, 28
		3.6	Determinants	2, 4, 12, 30, 40, 43
7	06 Nov–10 Nov	4.1	The Vector Space $\mathbb{R}^3$	1, 6, 13, 16, 24, 26, 30
		4.2	The Vector Space $\mathbb{R}^n$ & Subspaces	3, 8, 16, 19
Id al-Adha Vacation: Thursday November 11, 2010 – Sunday November 21, 2010				
8	22 Nov–24 Nov	4.3	Linear Combination & Independence of vectors	1, 6, 12, 17, 26
		4.4	Bases & Dimension for Vector Spaces	3, 8, 13, 16, 22
9	27 Nov–01 Dec	5.1	Second-Order Linear Equations	1, 11, 16, 19, 25, 28, 44
		5.2	General Solutions of Linear Equations	2, 8, 13, 24, 26
10	04 Dec–08 Dec	5.3	Homogeneous Equations with Constant Coefficients	1, 4, 14, 22, 28, 33, 38
		5.5	Method of Undetermined Coefficients	4, 12, 26, 32, 36
Major Exam II: Date, time & location TBA				
11	11 Dec–15 Dec	5.5	Method of Variation of Parameters	47, 52, 57, 60
		6.1	Introduction to Eigenvalues	2, 15, 24, 28, 36
12	18 Dec–22 Dec	6.2	Diagonalization of Matrices	2, 14, 25, 28
		6.3	Applications involving Powers of Matrices	2, 10, 20, 26, 36
13	25 Dec–29 Dec	7.1	First-Order Systems & Applications	2, 8, 13, 18, 21
		7.2	Matrices & Linear Systems	2, 4, 12, 16, 20, 25
14	01 Jan–05 Jan	7.3	The Eigenvalue Method for Linear Systems	4, 9, 18, 24, 26
		7.5	Multiple Eigenvalue Solutions	
15	08 Jan–12 Jan	7.5	Multiple Eigenvalue Solutions (contd.)	4, 10, 16, 28, 30
			Review	
Final Exam: Thursday January 27, 2011 (7.00pm)				

Notes:

- The final examination will be comprehensive.

- KFUPM policy with regard to attendance will be strictly enforced.

- **Grading Policy:**

Ex. I & II:	25% each
Classwork:	20%
Final:	30%