King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
Syllabus Math 260
Semester I, 2011 (111)
Coordinator: Jaafar AlMutawa

Course: Math 260 (Introduction to Differential Equations and Linear Algebra)
Text Book: Linear Algebra and Differential Equations, G. Peterson and J. Sochacki, Addison Wesley (2002).
Objectives: This course introduces elementary differential equations and linear algebra to students of Computer Science, Computer Engineering, System Engineering and Earth Sciences.

Week	Date	Section	Topic	Suggested Homework
1	Sep10-14	1. lecture notes	Differential Equations & Mathematical Models Integrals as General & Particular Solutions	2, 12, 22, 30, 36, 40 4, 6, 15, 18
2	Sep17-21	2. lecture notes	Separable Equations & Applications Linear First-Order Equations	1, 10, 24, 27, 33
3	Sep 25-28	3. lecture notes	Linear First-Order Equations (contd.) Substitution Methods & Exact Equations	4, 12, 24, 28, 32 2, 10, 22, 40, 60
4	Oct 1-5	1.1 1.2	System of linear equations Matrices and matrix operations	7, 9, 15,20,22 6, 16, 20, 22,28,32
5	Oct 8-12	1.3 1.4	Inverses of Matrices Special Matrices and additional properties	2, 6, 10, 11a, 17 4, 10, 33
Exam I: Thursday, Oct. 13, 2011; Material: lecture one-1.3 (From 1:00 pm to 3:00 pm).				
6	Oct 15-19	1.5 1.6	Determinants Further properties of determinants	8, 11, 16 3, 6, 10, 11
7	Oct. 22-26	2.1 2.2	Vector Spaces Subspaces and Spanning Sets	2, 4a, 9, 11 2a, 2b, 4, 11, 12, 16, 20
8	Oct. 29-31	2.3 2.5	Linear Independence and Bases Wronskians	6, 7, 10, 12, 14, 19, 22 3, 8, 12
Id al-Adha Vacation: Nov. 1-11, 2011				
9	Nov. 12-16	4.1 4.2	The Theory of Higher Order Linear DE Homogeneous Constant Coefficients Linear Differential Equations	2, 4, 6, 10, 14, 18 2, 6, 7, 9, 12
10	Nov. 19-23	4.2 4.3	Continue The Method of Undetermined Coefficients	18, 24, 28, 32 1, 7, 10, 13, 18, 24
Exam II: Thursday, Nov. 24, 2011; Material: 1.4-4.2 (from 1:00 pm to 3:00 pm).				
11	Nov. 26-30	4.4	The Method of Variation of Parameters	4, 8, 12, 15*
12	Dec. 3-7	5.4	Eigenvalues and Eigenvectors of Matrices	2, 4, 8, 16, 18, 20, 22
13	Dec. 10-14	5.5	Similar Matrices, Diagonalization, and Jordan Canonical Form	2, 4, 9, 10, 20, 22, 26
14	Dec. 17-21	6.1	The Theory of Systems of Linear Differential Equations	2, 4, 7, 11, 14
15	Dec. 24-28	6.2 6.3	Homogeneous Systems with Constant Coefficients: The Diagonalization Case Homogeneous Systems with Constant Coefficients: The Non-Diagonalization Case	2, 4, 8, 14, 22 *2, 4, 10
16	Dec. 31-Jan 2.	6.5	Converting Differential Equations To First-Order Systems Review	2, 4, 8, 13*

- The Dates of Exam I and Exam II are fixed by the College of Sciences to avoid any conflicts with other exams.
- MATLAB will be used whenever possible.
- KFUPM attendance policy will be enforced. A DN grade will be awarded to any student who accumulates 9 unexcused absences.

- Major exams are common.
- **Class Work Average.** The average (x out of 60) of the Class Work of the sections taught by the same instructor should be in the interval [36, 45].
- **Exam Questions**: The questions of the common exams are based on the examples, homework problems and the exercises of the textbook.
- **Missing one of the Two Common Major Exams I or II:** No makeup exam will be given under any circumstance. When a student misses Exam I or Exam II for a legitimate reason (such as medical emergencies), his grade for this exam will be determined based on the existing formula which depends on his performance in the non-missing exam and in the final exam.
- **Academic Integrity**: All KFUPM policies regarding ethics apply to this course.

Exams and Distribution of Marks:

- Major Exam I (25%) (Sections 1.1-3.3): Half of the questions will be written and half will be multiple choice.
- Major Exam II (25%) (Sections 3.4-5.3): Half of the questions will be written and half will be multiple choice.
- Final Exam (35%) (Comprehensive): Wednesday, 7:00 PM, 11-Jan-12. One third is written and two third of the questions is multiple choice.
- Quizzes+Homework (15%): At least three quizzes.