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

Syllabus Math 260

Semester II, 2011 (112)
Coordinator: Dr. Monther R. Alfuraidan

Course: Math 260 (Introduction to Differential Equations and Linear Algebra)
Text Book: Linear Algebra and Differential Equations, Gary L. Peterson and James S. Sochacki, Addison Wesley (2010).
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	Jan28–Feb 01	1.1 1.2	System of Linear Equations Matrices and Matrix Operations	3, 8, 13,16,17,20,22 5,14,18,21,23,27,28,32
2	Feb. 04 – 08	1.3 1.4	Inverses of Matrices Special Matrices and Additional Properties of Matrices	2,5,7,10,11,12,16,18,20 3,4,6,11,28,33
3	Feb. 11 – 15	1.5 1.6	Determinants Further Properties of Determinants	2,5,9,11,12,16 4,5,9,11,15
4	Feb. 18 – 22	2.1 2.2	Vector Spaces Subspaces and Spanning Sets	3a,4b,4c,5,6, 9,11 1c,2b,3,5,12,17,20,22
5	Feb. 25 – 29	2.3 2.4	Linear Independence and Bases Dimension; Nullspace, Row Space, and Column Space	5,8,10,13,18,22,23,28 1c,2c,3d,4d,5,7,13,16, 17,19,20
Exam 1: Tuesday Feb. 28, 2012, 06:00 – 08:00 pm- Material: 1.1-2.3 (100 points = 25%)- Building 54				
6	Mar. 03 – 07	2.5 3.1	Wronskians Introduction to Differential Equations	4,8,12 2,4,7,8,19
7	Mar. 10 – 14	3.2 3.3	Separable Differential Equations Exact Differential Equations	1, 2,4,6,11,12, 16 1,4,10,14,19
8	Mar. 17 – 21	3.4 3.5	Linear Differential Equations More Techniques for Solving First Order DEs	2,7,10,12,16,18 2,6,,9,13,14,18
Mid-Term Vacation: Sat. Mar. 24 – Wed. Mar. 28, 2012				
9	Mar.31–Apr. 4	3.6 3.7	Modeling with Differential Equations Reduction of Order	1,3,7,12 2,6,8,10,13,15
10	Apr. 07 – 11	4.1 4.2	The Theory of Higher Order Linear DE Homogeneous Constant Coefficients Linear Des	2,4,7,11,14,17,21 4,5,7,10,12,13,14,17,21, 23,25,30
Exam II: To be announced, Material: 2.4 – 4.1 (100 points = 25%)				
11	Apr. 14 – 18	4.3 4.4	The Method of Undetermined Coefficients The Method of Variation of Parameters	2,4,8,10,13,16,18,21,24,26 1,5,8,14,15
12	Apr. 21 – 25	5.4 5.5	Eigenvalues & Eigenvectors of Matrices Similar Matrices, Diagonalization, and Jordan Canonical Form	2,8,10,16,17,22,23 3,7,9,11,15,18, 20,22,23, 26,31,36,38
13	Apr.28–May 2	6.1 6.2	The Theory of Systems of Linear Des Homogeneous Systems with Constant Coefficients: The Diagonalization Case	2,4,5,7,8,10,11,14,15,24 3,5,8,12,18
14	May 05 – 09	6.2 6.3	Continued Homogeneous Systems with Constant Coefficients: The Non-Diagonalization Case	19,22,26 2,4,6,10
15	May 12 – 16	6.5	Converting Differential Equations To First-Order Systems	2, 3,4,6,7,9,13
Final Exam: To be announced [Comprehensive] (140 points = 35%)				

Remarks and Policies

Homework: A number of problems (listed above) have been selected from each section. It is recommended that you try to work out these problems after the lecture. The problems in the quizzes and exams will be similar to the homework problems. You are encouraged to come to your instructor office hours or make an appointment to discuss any difficulties related to the course, including the homework problems. MATLAB will be used whenever mention. Remember that "**The best way to learn Mathematics is to do Mathematics."**

Review Material: Use the old files for this course on the department of mathematics & Statistics web site's to practice solving at least one old exam before major exams. (http://www1.kfupm.edu.sa/math/ then go to Teaching Resources.. courses files/exams 032-today then click on math 260).

Attendance: KFUPM policy with regard to attendance will be enforced. Students are expected to attend all class meetings and are responsible for all of the material covered. Any changes in this syllabus or in the scheduling of exams, quizzes, etc. will be announced during class meetings. Students who miss a class meeting should copy a classmate's notes for that meeting. A DN grade will be awarded to any student **who accumulates 9 unexcused absences**.

Help: Individuals' question regarding the course work should be directed to the lecturer, either immediately after class or during scheduled office hours.

Evaluation:

- The Dates of Exam I and Exam II are fixed by the College of Sciences to avoid any conflicts with other exams.
- 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].
- **Class Work (60 Points = 15%):** The policy on the class work will be determined by your course instructor and will be announced during the first week of the semester.
- **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. 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**
- **ExM = AveM + [10(ExT-AveT)+14(ExT-AveF)]/24**
- **Academic Integrity**: All KFUPM policies regarding ethics apply to this course.

With Best Wishes for a Pleasant Semester
MRF