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

Syllabus Math 260

Semester I, 2011 (121)

Coordinator: Dr. Faisal A Fairag

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	Sep 1-5	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	Sept 8-12	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	Sept 15-19	1.5 1.6	Determinants Further Properties of Determinants	2,5,9,11,12,16 4,5,9,11,15
4	Sept 22-26	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	Sept 29-Oct 3	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 I: Monday Oct 1 at 7:30 PM at bldg 7 rooms: 121,122,124, Material: 1.1-2.3 (100 points=25%)				
6	Oct 6-10	2.5 3.1	Wronskians Introduction to Differential Equations	4,8,12 2,4,7,8,19
7	Oct 13-17	3.2 3.3	Separable Differential Equations Exact Differential Equations	1, 2,4,6,11,12, 16 1,4,10,14,19
Eid Al-Adha (Mid-Term) Vacation: Sat 20 Oct – Wed 31 Oct				
8	Nov 3 - 7	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
9	Nov 10-14	3.6 3.7	Modeling with Differential Equations Reduction of Order	1,3,7,12 2,6,8,10,13,15
10	Nov 17-21	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: Monday Nov 19 at 7 PM at bldg 7 rooms: 121,122,124, Material: 2.4 – 4.1 (100 points = 25%)				
11	Nov 24-28	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	Dec 1-5	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	Dec 8-12	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	Dec 15-19	6.2 6.3	Continued Homogeneous Systems with Constant Coefficients: The Non-Diagonalization Case	19,22,26 2,4,6,10
15	Dec 22-26	6.5	Converting Differential Equations To First-Order Systems	2, 3,4,6,7,9,13
Final Exam: (exam period 1-12 January) [Comprehensive] (140 points = 35%)				

Remarks and Policies

- ☑ 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 begiven 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
  - Major Exam II (25%) (Sections 3.4-5.3)
  - Final Exam (35%) (Comprehensive)
  - Quizzes+Homework (15%): At least three quizzes.