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

Math 260 – Syllabus

2011-2012 (113)

Instructor: **Dr. Muhammad Yousuf**
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Office Hours: SUMTW 11:30-12:00 noon.
Title: Math 260 (Introduction to Differential Equations and Linear Algebra)
Textbook: 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	Material	Homework
1	June 09 – 13	1.1 1.2 1.3 1.4	System of Linear Equations Matrices and Matrix Operations Inverse of Matrices Special Matrices and Additional Properties of Matrices	4,8,13,15,18,20,22,24 6,14,18,20,22,23,26,27,28,32 2,6,7,10,11,12,16,18,19,20 3,5,6,11,14,28,32,33
2	June 16 –20	1.5 1.6 2.1 2.2	Determinants Further Properties of Determinants Vector Spaces Subspaces and Spanning Sets	2,6,8,11,13,16 3,6,10,12,15 3,4,5,6, 9,11 1c,2b,3,5,12,17,20,22
3	June 23 – 27	2.3 2.4 2.5 3.1	Linear Independence and Bases Dimension; Nullspace, Row Space, and Column Space Wronskians Introduction to Differential Equations	5,8,10,13,18,22,23,28 1c,2c,3d,4d,5,7,13,16,17,19,20 4,8,12 2,4,7,8,19
Exam I, Saturday June 30, at 07:30—09:30 pm, Material: Ch. 1.1 - 2.5 (25%)				
4	Jun 30 – July 04	3.2 3.3 3.4 3.5	Separable Differential Equations Exact Differential Equations Linear Differential Equations More Techniques for Solving First Order Differential Equations	1,2,4,6,11,16 1,4,10,14,19 2,7,10,12,16,18 2,6,9,13,14,18
5	July 07 – 11	3.6 3.7 4.1 4.2	Modeling with Differential Equations Reduction of Order The Theory of Higher Order Linear DE Homogeneous Constant Coefficients Linear Differential Equations	1,3,7,12 2,6,8,10,13,15 2,4,7,11,14,17,21 4,5,7,10,12,13,14,17,21,23,25,30
6	July 14 – 18	4.3 4.4 5.4 5.5	The Method of Undetermined Coefficients The Method of Variation of Parameters Eigenvalues & Eigenvectors of Matrices Similar Matrices, Diagonalization, and Jordan Canonical Form	2,4,8,10,13,16,18,21,24,26 1,5,8,14,15 2,8,10,16,17,22,23 3,7,9,11,15,18,20,22,23,26 31,36,38
Exam II, Saturday July 21 at 07:30—09:30 pm, Material: 3.1 - 4.4 (25%)				
7	July 21 – 25	6.1 6.2 6.3	The Theory of Systems of Linear DEs Homogeneous Systems with Constant Coefficients: The Diagonalization Case Homogeneous Systems with Constant Coefficients: The Non- Diagonalization Case	2,4,5,7,8,10,11,14,15,24 3,5,8,12,18,19,22,26 2,4,6,10
8	July 28 – 30	6.5 Review	Converting Differential Equations To First-Order Systems	2,3,4,6,7,9,13
Final Exam: Wednesday August 01, 2012 at 8:30 am., Material: Comprehensive (35%)				

Grading Policy

1. Exam I: 25% (100 points) --- (**A common written exam**)
2. Exam II: 25% (100 points) --- (A **common written exam**)
3. Class Work: 15% (60 points). It is based on quizzes, homework and attendance (10%, 3%, 2%). There will be a quiz every week. No makeup quiz will be given under any circumstance. The section average (X) of the Class Work out of 60 should satisfy
$$X \in [36, 45].$$
4. Final Exam: 35% (140 points), a **comprehensive written exam.**

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.

Attendance: DN grade will be awarded to any student who accumulates 9 unexcused absences.

Academic Integrity: All KFUPM policies regarding ethics apply to this course.

Tips on how to enhance your problem-solving abilities:

1. Do all the homework assignments on time.
2. Practice (but not memorize) more problems than the above lists.
3. Always try to solve a problem on your own before reading the solution or asking for help.
4. If you find it difficult to handle a certain type of problems, try more problems of that type.
5. The practice of doing homework and reviewing the class lectures will make exam problems easier to tackle.
6. Make proper use of office hours.