King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
SYLLABUS
Semester II: 2012-2013(122)
Coordinator: Dr. Khairul Saleh

Course #: MATH 202
Title: Elements of Differential Equations
Textbook: A First Course in Differential Equations by D.G. Zill, 10th Edition

Week	Date	Sec.	Topics	Suggested Homework Problems
1	Jan 26 – 30	1.1	Definition and Terminology	*4, 7, 8, 9, 10, 13, 16, 20, 22, 24, 30, 32, 34*
		1.2	Initial-Value Problems	*2, 12, 20, 22, 24, 28, 30*
2	Feb 02 – 06	2.2	Separable Variables	*8, 14, 20, 22, 24, 28, 30, 45*
		2.3	Linear Equations	*6, 12, 14, 18, 20, 24, 28, 30, 32*
3	Feb 09 – 13	2.4	Exact Equations	*2, 5, 8, 15, 25, 28, 30, 33, 36, 42(a), 43*
		2.5	Solutions by Substitutions	*4, 6, 10, 13, 14, 18, 20, 22, 27, 28, 30*
4	Feb 16 – 20	3.1	Linear Models: Growth and Decay, Newton's Law of Cooling	*3,6, 8, 10, 14, 16, 18*
		4.1	Preliminary Theory–Linear Equations	
5	Feb 23 – 27	4.1.1	Initial-Value and Boundary-Value Problems	*3, 4, 5, 7, 10, 12, 14*
		4.1.2	Homogeneous Equations	*15, 22, 24, 28, 29, 30*
Major Exam I (100 Points): Tuesday, February 26, 2013, 06:00PM – 08:00PM. **Material:** 1.1 – 3.1				
6	Mar 02 – 06	4.1.3	Nonhomogeneous Equations	*32, 34, 36*
		4.2	Reduction of Order	*2, 4, 8, 12, 14, 19, 20*
7	Mar 09 – 13	4.3	Homogeneous Linear Equations with Constant Coefficients	*4, 9, 12, 15, 18, 20, 26, 30, 34, 36, 40, 49, 50, 51*
		4.5	Undetermined Coefficients – Annihilator Approach	*8, 13, 14, 22, 24, 26, 30, 32, 34, 41, 44, 48, 52, 60, 62, 68, 72*
8	Mar 16 – 20	4.6	Variation of Parameters	*6, 11, 13, 18, 20, 24, 26, 28*
Midterm Vacation: March 23 – 27, 2013				
9	Mar 30 – Apr 03	4.7	Cauchy-Euler Equation (*Both Methods*)	*4,8, 10, 11, 14, 16, 18, 20, 24, 28, 32, 34, 38, 39*
10	Apr 06 – 10	6.1	Review of Power Series	*1, 2, 4, 6, 10, 12, 14*
		6.2	Solutions About Ordinary Points	*1, 3, 6, 8, 10, 14, 16, 18, 20*
Major Exam II (100 points): Saturday, April 06, 2013, 06:00PM – 08:00PM. **Material:** 4.1 – 4.7				
11	Apr 13 – 17	6.3	Solutions About Singular Points	*3, 6, 10, 13, 14, 18, 20, 22, 32*
		App II	Matrices and Linear Systems (*review*)	*14, 15, 19, 24, 27, 30, 32, 33, 39, 43*
12	Apr 20 – 24	App II	The Eigenvalue Problem	*47, 49, 52, 53, 54, 55, 59, 60, 61*
		8.1	Preliminary Theory – Linear Systems	*4, 5, 8, 14, 15, 17, 18, 23, 24, 26*
13	Apr 27 – May 01	8.2	Homogeneous Linear Systems	
		8.2.1	Distinct Real Eigenvalues	*4, 8, 10, 13, 14*
		8.2.2	Repeated Eigenvalues	*20, 22, 24, 26, 27, 28, 30*
14	May 04 – 08	8.2.3	Complex Eigenvalues	*33, 34, 36, 39, 40, 42, 45*
		8.3	Nonhomogeneous Linear Systems	
		8.3.2	Variation of Parameters	*11, 12, 14, 16, 23, 27, 30, 32*
15	May 11 – 15	8.4	Matrix Exponential (No Laplace Transform)	*1, 4, 5, 6, 8, 9, 10, 12*
		----	*Pace Adjustment and Review*	
Final Exam (140 points): Monday May 27, 2013 08:00AM [Comprehensive]				

- For remarks about Homework Problems and exams, see the following page.

Remarks and Policies

Homework:

- The selected homework problems indicate the levels of the breadth and the depth of coverage. To acquire proficiency on solution methods, the students are strongly urged to solve much more problems than indicated in the syllabus.

- **Review Material:** In the introduction of each section in the textbook, *review material*, if any, is indicated. **Students** must do all reviews. Students should make a plan, based on the Syllabus, for all review materials required for the course.

Exams:

- Any student **missing a major exam** with or without excuse **will not be given a Make-Up Exam**.

  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 the Student: Grade obtained = ExT, Ave of Exam: AveT

  Final Exam: Grade obtained = ExF, Ave of Exam: AveF

  ExM = AveM + [10(ExT-AveT)+14(ExF-AveF)]/24

- **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.

Attendance:

- Attendance is compulsory. KFUPM policy with respect to attendance will be strictly enforced.
- Any student accumulating **9 unexcused absences** will be awarded DN Grade in the course.