King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
SYLLABUS
Semester I: **2013-2014(131)**
Coordinator: Dr. Abdul Rahim Khan

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	**Sep 1-5**	1.1 1.2	Definitions and Terminology Initial-Value Problems	5, 13, 14, 18, 20, 22, 29, 32, 36, 38 2, 6, 13,19, 22, 24, 26, 30
2	**Sep 8-12**	2.2 2.3	Separable Variables Linear Equations	6, 10, 12, 21, 26,30, 32,48 4, 12, 15, 18, 20, 22, 28, 30, 36
3	**Sep 15-19**	2.4 2.5	Exact Equations Solutions by Substitutions	5, 8, 12, 20, 28, 30, 31, 34, 42(b), 43 2, 6, 8, 10, 12,16, 22, 25, 28, 29
Monday, September 23, 2013 … (National Holiday)				
4	**Sep 22-26**	3.1 4.1	Linear Models: Growth and Decay, Newton's Law of Cooling Linear Equations: Basic Theory	4, 8, 10, 15, 16, 18, 20
5	**Sep 29-Oct 3**	4.1.1 4.1.2	Initial-Value and Boundary-Value Problems Homogeneous Equations	2,4,6, 10, 12,13(c) , 14(d) 16, 22, 24,25, 28, 30
First Exam: Saturday, October 5 ,2013,12.30 P.M. (100 points) Material: 1.1 – 3.1				
6	**Oct 6-9**	**4.1.3** **4.2**	Nonhomogeneous Equations Reduction of Order	31,34,36(b,c) 4,6,10,13,16,18,19
Id Al-Adha Vacation : Oct 10-20				
7	**Oct 21-24**	4.3 4.5	Homogeneous Linear Equations with Constant Coefficients Undetermined Coefficients – Annihilator Approach	5, 8, 12, 14, 18, 22, 28, 32, 36, 42, 49, 50 2, 8,14, 20, 25, 28,32,34, 44, 48, 50, 61, 64, 68, 71
8	**Oct 27-31**	4.6	Variation of Parameters	2,6 11, 12, 18, 22, 24, 26, 28
9	**Nov3-7**	4.7	Cauchy-Euler Equation (*Both Methods*)	1,6, 8, 12, 16, 18, 22, 24, 29, 32, 36, 38, 40
10	**Nov 10-14**	6.1 6.2	Review of Power Series Solutions About Ordinary Points	2,3, 4, 8, 10, 12, 16 2,4,11,12,16,21,22
11	**Nov 17-21**	6.3 *App II*	Solutions about Singular Points Matrices and Linear Systems (*review*)	1,4,8,12,14,16,19,24,30,32 12,18,22,23,26,30(d, g) , 36,40,44
Second Exam: Wednesday, November 27, 2013, 8.00 P.M. (100 points) Material: 4.1 – 4.7				
12	**Nov 24-28**	*App II* 8.1	The Eigenvalue Problem Preliminary Theory—Linear Systems	48, 49, 53, 54, 56, 59, 60, 61 3, 6, 8, 10, 14, 15, 16, 19, 22, 24, 26
13	**Dec 1-5**	8.2 8.2.1 8.2.2	Homogeneous Linear Systems Distinct Real Eigenvalues Repeated Eigenvalues	 2, 7, 9, 10,14 22, 24, 26, 27, 29, 30
14	**Dec 8-12**	8.2.3 8.3	Complex Eigenvalues Nonhomogeneous Linear Systems	34, 37, 38, 42, 46
15	**Dec 15-19**	8.3.2 8.4	Variation of Parameters Matrix Exponential (No Laplace Transform)	12, 14, 15, 28, 30, 31 2, 5, 6, 8, 9, 10, 12
16	**Dec 22-24**		Pace Adjustment and Review	
Final Exam: To be announced later (140 points) [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.
- In Sec. 8.4, problems 1, 5 and 9 refer to the same matrix. The same is true for problems 2 and 6 and problems 4 and 8. The matrix e^{At} is to be computed by the definition given in (3). The material about *Laplace Transform* on page 358 is *omitted*.

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

- **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.

******Best Wishes for a Pleasant Semester******