King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics
SYLLABUS
Semester II: 2010-2011 **(102)**
Instructor: Dr. Boubaker Smii

Course #: MATH 202
Title: Elements of Differential Equations
Textbook: A First Course in Differential Equations by D.G. Zill, 9th Edition
Coordinator: Dr. Salim Belhaiza

Week	Date	Sec.	Topics	Suggested Homework
1	Feb 12-16	1.1	Definition and Terminology	*Ex: 16, 22, 24, 30, 34, 38. Pgs 10-11*
		1.2	Initial-Value Problems	*Ex: 14, 18, 20, 28, 30, 32. Pg 17*
2	Feb 19- 23	2.2	Separable Variables	*Ex: 8, 14, 20, 22, 24, 30, 48. Pgs 50-51*
		2.3	Linear Equations	*Ex: 6, 14, 16, 18, 30, 36. Pgs 60-61*
3	Feb 26-Mar 2	2.4	Exact Equations	*Ex: 8, 16, 24, 28, 34, 38. Pgs 68-69*
		2.5	Solutions by Substitutions	*Ex: 10, 12, 18, 20, 24, 36, 30. Pgs 74-75*
4	Mar 5-9	3.1	Linear Models: Growth and Decay, Newton's Law of Cooling and Series Circuits.	*Ex: 6, 8, 10, 12, 16, 18, 30, 32. Pgs 89-91*
		4.1	Linear Equations: Basic Theory	
		4.1.1	Initial-Value and Boundary-Value Problems	*Ex: 4, 6, 8, 10, 12. Pgs 128-129*
5	Mar 12-16	4.1.2	Homogeneous Equations	*Ex: 16, 18, 20, 26, 28. Pg 129*
		4.1.3	Non-homogeneous Equations	*Ex: 32, 36, 38. Pgs 129-130*
6	Mar 19-23	4.2	Reduction of Order	*Ex: 2, 4, 12, 16, 18. Pgs 132-133*
		4.3	Homogeneous Linear Equations with Constant Coefficients	*Ex: 8, 20, 30, 34. 40. Pgs 138-139*
			First Exam: Thursday - March 24th, 2011 [1.1-4.2] (22%)	
7	Mar 25-30	4.5	Undetermined Coefficients – Annihilator Approach	*Ex: 8,12,16,30,48,60,68.Pgs 156-157*
		4.6	Variation of Parameters	*Ex: 6, 12, 16, 20, 24, 26. Pgs 161-162*
8	Apr 2-6	4.7	Cauchy-Euler Equation(*Both Methods*)	*Ex: 8, 22, 28, 32 38. Pg 168*
			Vacation: Thursday April 7th, 2011 to Friday April 15th, 2011	
9	Apr 16-20	6.1	Solutions About Ordinary Points: 6.1.2 Power series solution	*Ex: 16, 20, 24, 28, 30, 34. Pg 230*
10	Apr 23-27	6.2	Solutions about Singular Points	*Ex: 8,12, 14, 20, 24, 30, 32. Pgs 239-240*
			Second Exam: Monday – April 25th, 2011 [4.3-6.1] (22%)	
11	Apr 30-May 4	*6.2*	Continue with Section 6.2 Solutions about Singular Points	
		6.3	Bessel's and Legendre's Equations (Some examples, No Properties)	*Ex: 4,8,12,16,24, 44, 46. Pgs 250-253*
12	May 7- 11	8.1	Preliminary Theory-Linear Systems (Appendix II for review)	*Ex: 6,8,12,4,16,20,24,26. Pg 311*
		8.2	Homogeneous Linear Systems	
		8.2.1	Distinct Real Eigenvalues	*Ex: 4,8,10,14. Pg 324*
13	May 14-18	8.2.2	Repeated Eigenvalues	*Ex: 20, 24, 28. Pg 325*
		8.2.3	Complex Eigenvalues	*Ex: 34,40, 44. Pgs 325-326*
14	May 21-25	8.3	Non-Homogeneous Linear Systems	*Ex: 6,8,10. Pg 332*
		8.3.2	Variation of Parameters	*Ex: 12,16,18,24,28 Pgs 333-334*
15	May 28 – Jun 1	8.4	Matrix Exponential (No Laplace Transforms)	*Ex:2,4,6,8,10,16,20,24. Pgs 336-337*
		--	Pace Adjustment and Review	

Remarks & Policies

Homework:

- Your course instructor will indicate the Homework every week. **He may assign you Homework out of textbook as well.**

- 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.

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

Exams:

- The following dates for Major Exams I and II are set by the College of Sciences to avoid conflicts with other exams:

    o Exam I (88 points): **Thursday, March 24th, 2011**

    o Exam II (88 points): **Monday, April 25th, 2011**

- The date, time and the place of the Final Exam will be announced by the Registrar.
- The Final Exam (144 points) is Comprehensive.
- 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 comensated:= 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

$$ExM = AveM + [11(ExT-AveT)+18(ExT-AveF)]/29$$

Class Work (80 Points):

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.