Department of Mathematical Sciences, KFUPM
Math 202 Syllabus (071)
Dr. K. M. Furati

Course Title: Elements of Differential Equations

Textbook: A First Course in Differential Equations by D.G. Zill, 8th Ed.

Course Description: First order and first degree equations. The homogeneous differential equations with constant coefficients. The methods of undetermined coefficients, reduction of order, and variation of parameters. The Cauchy-Euler equation. Series solutions. Systems of linear differential equations. Applications.

Wk	Date	Sec.	Material	Homework
1	Sep 8-12	1.1	Definitions and Terminology	4, 7, 8, 9, 10, 13, 16, 20, 27, 28, 30
		1.2	Initial Value Problems	2, 12, 20, 22, 27
2	Feb 15-19	2.1	Solution Curves without a Solution	
		2.2	Separable Variables	8, 14, 20, 22, 23, 27, 45
3	Sep 22-26	2.3	Linear Equations	5, 13, 16, 18, 30, 37
		2.4	Exact Equations	2, 5, 8, 15, 25, 27
4	Sep 29-Oct 03	2.5	Solutions by Substitutions	4, 6, 10, 13, 18, 21, 26, 30
		3.1	Linear Models	3, 6, 13, 14, 15, 27
Eid Vacation				
5	Oct 20-24	4.1.1	Initial and Boundary Value Problems	3, 10, 12, 13
		4.1.2	Homogeneous Equations	15, 21, 23, 28
6	Oct 27-31	4.1.3	Nonhomogeneous Equations	33, 36, 37(b,e)
		4.2	Reduction of Order	1, 3, 12, 14, 19
7	Nov 03-07	4.3	Homogeneous Linear Equations with Constant Coefficients	4, 9, 12, 15, 20, 34, 40, 49, 50, 51
		4.5	Undetermined Coefficients--Annihilator Approach	8, 13, 22, 24, 34, 41, 48, 64, 67, 73
8	Nov 10-14	4.6	Variation of Parameters	6, 11, 13, 24, 25, 28
		4.7	Cauchy-Euler Equation	3, 5, 10, 11, 14, 16, 19, 31, 34, 37, 39
9	Nov 17-21	6.1.1	Review of Power Series	1, 10, 11
		6.1.2	Solutions about Ordinary Points	15, 17, 20, 22, 32
10	Nov 24-28	6.2	Solutions about Singular Points	3, 10, 13, 14, 19, 20
11	Dec 01-05	A.II.2	Gauss Elimination	27, 29, 31, 33, 39, 43
		A.II.3	Eigenvalue Problem	47, 49, 52, 53, 55
12	Dec 08-12	8.1	Preliminary Theory	4, 5, 8, 14, 15, 17, 23, 25
		8.2	Homogeneous Linear Systems with Constant coefficients	
Eid Vacation				
13	Dec 29- Jan 02	8.2.1	Distinct Real Eigenvalues	3, 7, 10, 13
		8.2.2	Repeated Eigenvalues	19, 21, 23, 25, 27
14	Jan 05-09	8.2.3	Complex Eigenvalues	33, 34, 36, 39, 41, 45
		8.3.2	Variation of Parameters	11, 12, 23, 32
15	Jan 12-16	8.4	Matrix Exponential	1, 2, 4, 5, 6, 8, 9
			Review	