

## Math 202 Syllabus (051)

Dr. K. M. Furati

**Course Title:** Elements of Differential Equations

**Textbook:** A First Course in Differential Equations by D.G. Zill, 8<sup>th</sup> 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 10-14	1.1	Definitions and Terminology	4,8,14,20,24
		1.2	Initial Value Problems	2,4,8,16,18,22
2	Sep 17-21	2.1	Solution Curves without a Solution	1,3,7,8,15,17,20
		2.2	Separable Variables	6,14,22,24,44
National Holiday: Saturday 24 September 2005				
3	Sep 25-28	2.3	Linear Equations	2,5,10,17,30
		2.4	Exact Equations	2,5,9,15,25,34,42,43
4	Oct 01-05	2.5	Solutions by Substitutions	6,8,13,21,26,30
		3.1	Linear Models	5,8,13,20,21,23,27
5	Oct 08-12	4.1.1	Initial and Boundary Value Problems	5,8,11,12
		4.1.2	Homogeneous Equations	16,19,23, 24,25,28,29
6	Oct 15-19	4.1.3	Nonhomogeneous Equations	33,36,38
		4.2	Reduction of Order	3,5,12,13,14,18,19
7	Oct 22-26	4.3	Homogeneous Linear Equations with Constant Coefficients	12,20,35,40,51
		4.5	Undetermined Coefficients--Annihilator Approach	3,10,12,24,30,54,62
Eid Al-Fitr Vacation				
8	Nov 12-16	4.6	Variation of Parameters	11,13,17,27
		4.7	Cauchy-Euler Equation	8,12,25,37,38
9	Nov 19-23	6.1	Solutions about Ordinary Points	
		6.1.1	Review of Power Series	1,5,10,12
10	Nov 26-30	6.1.2	Solutions about Ordinary Points	13,16,18,28
11	Dec 03-07	6.2	Solutions about Singular Points	3,9,14,19,25
12	Dec 10-14	A.II.2	Gauss Elimination	31,34,38
		A.II.3	Eigenvalue Problem	47,48,49,50
13	Dec 17-21	8.1	Preliminary Theory	1,4,10,15,24
		8.2	Homogeneous Linear Systems with Constant coefficients	
14	Dec 24-28	8.2.1	Distinct Real Eigenvalues	3,6,11,13
		8.2.2	Repeated Eigenvalues	19,21,26,28
15	Dec 31 - Jan 04	8.2.3	Complex Eigenvalues	33,38,42,44
		8.3.2	Variation of Parameters	1,3,8,13,18
Eid Al-Adha Vacation				
16	Jan 21		Review	