Department of Mathematics & Statistics, KFUPM

Math 202 Syllabus (133)

Dr. K. M. Furati

Course Title: Elements of Differential Equations

Textbook: A First Course in Differential Equations by D.G. Zill, 10th 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	Jun 08-12	1.1	Definitions and Terminology	5, 13, 14, 18, 20, 22, 29, 32, 36, 38
		1.2	Initial Value Problems	2, 6, 13,19, 22, 24, 26, 30
		2.2	Separable Variables	6, 10, 12, 21, 26,30, 32,48
		2.3	Linear Equations	4, 12, 15, 18, 20, 22, 28, 30, 36
2	Jun 15-19	2.4	Exact Equations	5, 8, 12, 20, 28, 30, 31, 34, 42(b), 43
		2.5	Solutions by Substitutions	2, 6, 8, 10, 12,16, 22, 25, 28, 29
		3.1	Linear Models	4, 8, 10, 15, 16, 18, 20
		4.1.1	Initial and Boundary Value Problems	2,4,6, 10, 12,13(c) , 14(d)
3	Jun 22-26	4.1.2	Homogeneous Equations	16, 22, 24,25, 28, 30
		4.1.3	Nonhomogeneous Equations	31,34,36(b,c)
		4.2	Reduction of Order	4,6,10,13,16,18,19
		Exam I: Tue, Jun 24, 7:00 pm. Material: 1.1 – 4.1.1		
4	Jun 29- Jul 3	4.3	Homogeneous Linear Equations with Constant Coefficients	5, 8, 12, 14, 18, 22, 28, 32, 36, 42, 49, 50
		4.5	Undetermined Coefficients--Annihilator Approach	2, 8,14, 20, 25, 28,32,34, 44, 48, 50, 61, 64, 68, 71
		4.6	Variation of Parameters	2,6 11, 12, 18, 22, 24, 26, 28
		4.7	Cauchy-Euler Equation (both methods)	1,6, 8, 12, 16, 18, 22, 24, 29, 32, 36, 38, 40
5	July 6-10	6.1	Review of Power Series	2,3, 4, 8, 10, 12, 16
		6.2	Solutions about Ordinary Points	2,4,~~6~~,12,16,~~20~~,22
		6.3	Solutions about Singular Points	~~2~~,4,8,~~12~~,14,16,19,~~24~~,~~30~~,32
6	July 13-17	A.II.2	Matrices and Linear Systems (review)	12,18,22,23,26,30(d, g) , 36,40,44
		A.II.3	Eigenvalue Problem	48, 49, 53, 54, 56, 59, 60, 61
		8.1	Preliminary Theory-Linear Systems	3, 6, 8, 10, 14, 15, 16, 19, 22, 24, 26
		8.2	Homogeneous Linear Systems with Constant coefficients	NA
		Exam II: Tue, July 15, 9:30 pm. Material: 4.1.2 – 6.3		
7	Aug 3-7	8.2.1	Distinct Real Eigenvalues	2, 7, 9, 10,14
		8.2.2	Repeated Eigenvalues	22, 24, 26, 27, 29, 30
		8.2.3	Complex Eigenvalues	34, 37, 38, 42, 46
		8.3	Variation of Parameters	12, 14, 15, 28, 30, 31
8	Aug 10-12	8.4	Matrix Exponential (No Laplace Trans.)	2, 5, 6, 8, 9, 10, 12
			Review	

Remarks and Policies

Grading Policy

Quizzes & HW	30%
Exam I	20%
Exam II	20%
Final	30%

- No Make-up exams or quizzes.
- **According to department policy, the passing grade is 50%.**

Attendance

- DN grade will be reported for 8 or more absences.
- Only official excuses are accepted.