Course information: Math 204/ Differential Equations 1.
Second semester 1437/1438 (2016/2017)

Instructor's information:

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Office Hours: Sundays and Tuesdays 12:30-3 pm, Thursdays 11-12 pm.

The total of 100 marks are distributed as follows:

Exam 1= 25%
Exam 2= 25%
Assignments= 10%
Project = 5%
Final Exam= 35%

Important dates:

Exam 1	**20/07/1438**
Exam 2	**12/08/1438**
Final Exam	**TBA**

No makeup tests will be given. If a student misses a test *with instructor's approval*, the score on the final exam will be used to replace the missing test score. In the event that a student misses a test without instructor's approval, a zero will be assigned for that test score. Approval must be obtained **in advance** if at all possible, otherwise, the absence reason must be provided within, at most, one week following the exam.

Expectations from students: I aim to treat all students with respect and fairness. Since I expect the same consideration, please observe the following courtesies:

Attendance at each scheduled class meeting is expected. A DN will be given if the student misses 25% of the classes

All assignments must be handed in on time. No late assignment will be allowed

Arrive for class on time. Late class arrivals are disruptive and inconsiderate; moreover, they may be regarded as absences.

Silence cell phones. Use of cell phones in the classroom will not be permitted; you should not bring one into the classroom unless the ringer is turned OFF. Students in violation of this policy may be asked to leave class.

Math 204 Syllabus

Textbook : A First Course in Differential Equations, Ninth Edition, Author : Dennis G. Zill

Chapter Title	Section	Theoretical (Definitions & Theorem)	Exam.	Exer.
Ch1: Introduction to Differential Equations	1.1 Definitions and Terminology	Definition 1.1.1, Classification by Type, Classification by Order, Classification by Linearity, Definition 1.1.2, Interval of Solution, Explicit and Implicit Solutions, Definition 1.1.3. Families of Solutions, Systems of DEs, Remarks	1-4	2,5,10, 22,37
	1.2 Initial-Value Problems	Introduction, First and Second-order IVP, Existence & Uniqueness, Theorem 1.2.1, Interval of Existence/Uniqueness, Remarks	2-5	18,27
Ch2: First order Differential Equations	2.1 Solution curve without a solution	Direction fields, Autonomous first-order Des, Critical Points, Equilibrium Solutions, Attractors and Repellers	1-4	21
	2.2 Separable Equations	Definition 2.2.1, Losing a Solution Solutions Defined by Integrals, Remarks	1- 5	20,22,28
	2.3 Linear Equations	Definition 2.3.1, Method of Solution, Discontinuous Coefficients, Remarks	1-6	17, 35
	2.4 Exact Equations	Introduction, Definition 2.4.1, Theorem 2.4.1, An Integrating Factor, Remarks	1-4	38
	2.5 Solution by Substitutions	Homogenous Equations, Bernoulli's Equations, Reduction to Separation of Variables	1-3	13,15,29,30,35,
Ch3:Modeling with First-Order Differential Equations	3.1 Linear Models	Growth and Decay, Carbon Dating, Newton's Law of Cooling/Warming	1-4	

Chapter Title	Section	Theoretical (Definitions & Theorem)	Examp.	Exer.
Ch4: Higher order Differential Equations	4.1 Preliminary Theory	Theorem 4.1.1, Differential Operators, Theorem 4.1.2, Definition 4.1.1, Definition 4.1.2, Theorem 4.1.3, Definition 4.1.3, Theorem 4.1.4, Theorem 4.1.5, Theorem 4.1.6, Theorem 4.1.7, Remarks	2,3,4,5,7 ,9-11	30
	4.2 Reduction of order	Reduction of order, General case	1,2	
	4.3 Homogeneous Linear Equations with Constant Coefficients	Introduction, Auxiliary Equation	1,3,4	30,40
	4.4 Undetermined Coefficients	Introduction, Particular Solution Using Undetermined Coefficients, Remarks	1-11	41
	4.5 Undetermined Coefficients – Annihilator Approach	Undetermined Coefficients – Annihilator Approach, Remarks	1-7	26, 70
	4.6 Variation of Parameters	Assumptions, Particular Solution Using Variation of Parameters, Remarks	1,2	14,18
	4.7 Cauchy- Euler Equation	7 Cauchy- Euler Equation, Method of Solution, Reduction to Constant Coefficients	1-5	24
	4.8 Solving System of DEs by Elimination	Solution by Elimination	1,2	9

Chapter Title	Section	Theoretical (Definitions & Theorem)	Examp.	Exer.
Ch7: The Laplace Transform	7.1 Definition of Laplace Transform	Definition 7.1.1, Theorem 7.1.1, Definition 7.1.2, Theorem 7.1.2, Theorem 7.1.3, Remarks	1-5	26,36,38,40,
	7.2 Inverse Transform and Transform of Derivatives	Theorem 7.2.1, Theorem 7.2.2, Remarks	1-5	29
	7.3 Operational Properties I	Theorem 7.3.1, Definition 7.3.1, Theorem 7.3.2, Alternative Form of Theorem 7.3.2	1-4	17
	7.4 Operational Properties II	Theorem 7.4.1, Transform of Integrals, Theorem 7.4.2	1-4	21,23,31