

University of Regina
Department of Mathematics and Statistics

MATH 281-001 Introduction to Differential Equations
Course Syllabus, Winter 2006
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Section numbers refer to Zill and Cullen, *Differential Equations with Boundary-Value Problems*, sixth edition, Thomson Brooks/Cole 2005. We will be covering material from chapters 1, 2, 4, 6, 7, and 8 of the textbook. Within each chapter we will be covering a selection of sections as indicated below.

This course syllabus is subject to revision depending on circumstances. Please check <http://www.math.uregina.ca/~doolitt/math281/MATH281-200610-Syllabus.pdf> occasionally for updates.

Lecture	Date	Topic	Sections
1	Jan 6	Introduction	
2	Jan 9	Definitions and Terminology	1.1
3	Jan 11	Definitions and Terminology	1.1
4	Jan 13	Initial-Value Problems	1.2
5	Jan 16	Differential Equations as Mathematical Models	1.3
6	Jan 18	Solution Curves without a Solution	2.1
7	Jan 20	Separable Variables	2.2
8	Jan 23	Linear Equations	2.3
9	Jan 25	Quiz 1 (sections 1.1-1.3)	Review (1.1-1.3)
10	Jan 27	Exact Equations	2.4
11	Jan 30	Linear Differential Equations: Basic Theory (Initial Value and Boundary Value Problems; Homogeneous Equations)	4.1.1 and 4.1.2
12	Feb 1	Quiz 2 (sections 2.1-2.3)	Review (2.1-2.3)
13	Feb 3	Linear Differential Equations: Basic Theory (Nonhomogeneous Equations)	4.1.3
14	Feb 6	Reduction of Order	4.2
15	Feb 8	Homogeneous Linear Equations with Constant Coefficients	4.3
16	Feb 10	Review	Review (1.1-1.3)
17	Feb 12	Review	Review (2.1-2.4)
18	Feb 15	Midterm 1 (chapters 1 and 2)	
19	Feb 17	Undetermined Coefficients – Superposition Approach	4.4
20	Feb 27	Undetermined Coefficients –	4.5

Lecture	Date	Topic	Sections
		Annihilator Approach	
21	Mar 1	Quiz 3 (sections 4.1-4.3)	Review (4.1-4.3)
22	Mar 3	Variation of Parameters	4.6
23	Mar 6	Series Solution About Ordinary Points	6.1
24	Mar 8	Definition of the Laplace Transform	7.1
25	Mar 10	Review	Review (4.1-4.3)
26	Mar 12	Review	Review (4.4-4.6)
27	Mar 15	Midterm 2 (chapters 1, 2, and 4)	
28	Mar 17	Inverse Transforms and Transforms of Derivatives (Inverse Transforms)	7.2.1
29	Mar 20	Inverse Transforms and Transforms of Derivatives (Transforms of Derivatives)	7.2.2
30	Mar 22	Operational Properties I (Translation on the s-Axis)	7.3.1
31	Mar 24	Operational Properties I (Translation on the (t-Axis)	7.3.2
32	Mar 27	Operational Properties II (Derivatives of a Transform and Transforms of Integrals)	7.4.1 and 7.4.2
33	Mar 29	Quiz 4 (sections 4.6, 6.1, 7.1-7.2)	Review (4.6, 6.1, 7.1-7.2)
34	Mar 31	Operational Properties II (Transform of a Periodic Function)	7.4.3
35	Apr 3	Preliminary Theory	8.1
36	Apr 5	Homogeneous Systems	8.2
37	Apr 7	Matrix Exponential	8.4
38	Apr 10	Review	Review (chapter 7)
39	Apr 12	Review	Review (chapter 8)