

Text: *Differential Equations with Boundary Value Problems*, 7th ed., by Dennis G. Zill and Michael R. Cullen. Some quizzes and hour exams may require use of the USNA Mathematical Tables in lieu of a calculator. Your instructor will determine this.

LESSON/PAGES	SECTION/TOPIC	PROBLEMS
1. 2-10	1.1 Introduction to differential equations	p. 10: 1,2,13,19,27,29
2. 13-16	1.2 Initial value problems	p. 17: 1,9,13,14,17,25,26
3. 44-50; 53-58	2.2 Separable variables; 2.3 Linear equations	p. 50: 1,6,7,17,25; p.60: 3,5,10,23,27,28
4. 35-37, 75-79	2.1.1 Direction fields; 2.6 Euler's method	p. 41: 1,3; p.79: 1,2
5. 85-87	3.1 Applications of linear models: Cooling and mixing	p. 89: 13,17,21,25
6.	Review	
7. 118-120	4.1 Higher order DE's: Existence and uniqueness	p. 128: 3,5,7,9,10
8. 120-127	4.1 Higher order DE's: Linear independence, non-homogeneous DE's	p. 128: 15,18,23,25,31
9. 133-138	4.3 Linear homogeneous constant coefficient DE's: real roots	p. 139: 3,5,15,31,35
10.133-138	4.3 Linear homogeneous constant coefficient DE's: complex roots	p. 139: 9,11,25,29,43-48
11.150-156	4.5 Annihilators	p. 156: 5,17,21,23,31,33
12.150-156	4.5 Non-homogeneous DE's by annihilators	p. 156: 39,47,51,67
13.	Review	
14.	Test 1	
15.182-186	5.1.1 Undamped mass-spring systems	p. 194: 1,2,3,5
16.182-186	5.1.1 Undamped mass-spring systems	p. 194: 9,11
17.186-189	5.1.2 Damped mass-spring systems	p. 194: 17,19,21,23,25
18.189-191	5.1.3 Mass-spring system with external force	p. 194: 31,39
19.87-88,192-193	5.1.4 Series electrical circuits	p. 194: 45,47,53
20.Review		
21.256-258	7.1 Laplace transform	p. 261: 5,7,11,25,31,38
22.262-265	7.2.1 Inverse LT	p. 269: 5,15,23,27
23.265-269	7.2.2 Solving DE's using LT's	p. 269: 33,35,39
24.270-274	7.3.1 First translation theorem	p. 278: 5,9,11,15,21,29

25.274-277	7.3.2 Unit step function	p. 278: 37,41,49,51,53
26.274-277	7.3.2 Unit step function in a DE	p. 278: 65,71,73
27.Review		
28.282-286	7.4 Derivative of LT, convolution	p. 289: 1,3,11,19,25,33
29.292-294	7.5 Dirac delta function	p. 295: 1,3,9,11
30.295-297	7.6 Solving systems of DE's using LT's	p.299: 1,3,14
31.	Review	
32.	Test 2	
33.App-3-App-10	Appendix II.1 Matrices	p. App-18: 1,3,4,7,11,15,25
34.App-10-App-14	Appendix II.2 Solving linear systems by row reduction	p. App-18: 31,35,39
35.App-10-App-14	Appendix II.2 Matrix inverse by row reduction	p. App-18: 41,45
36.App-14-App-18	Appendix II.3 Cramer's rule, eigenvalues and eigenvectors	p. App-18: 47,49,53
37.	Review	
38.304-310	8.1 Systems of DE's	p. 310: 1,11,13,17,21,23
39.311-315	8.2.1 Linear systems with real, distinct eigenvalues	p.324: 1,3,5,7
40.320-324	8.2.3 Linear systems with complex eigenvalues	p.324: 33,35,37,39
41.329-332	8.3.2 Nonhomogeneous systems by variation of parameters	p.332: 11,13,15,29
42.109-110,297-298	3.3,7.6 Electrical networks	p. 299: 15,16 [use LT's for this one]; p. 332: 33
43.353-355	9.4 Euler's method for linear systems and higher order DE's	P.357: 1,9 (use Euler's method with $h = 0.1$)
44.	Review	
45.	Test 3	
46.398-402	11.1 Orthogonal functions	p.402: 1,10,12,17
47.403-405	11.2 Fourier series	p.407: 1,3,5,9
48.405-407	11.2 Convergence of FS's	p. 407: Graph FS(x) for 7,11; 17,19
49.408-411	11.3 Sine and cosine series	p.414: 1,3,5,7,11,13
50.411-413	11.3 Half-range expansions	p.414: 25,29,41
51.433-435	12.1 Separation of variables for partial differentials equations	p.436: 1,3,5,11
52.443-444	12.3 Heat equation, ends	p.445: 1,6

	held at 0 degrees	
53.	12.3 Heat equation, ends insulated	p.445: 3,5
54.	Review	
55.	Review	
56.	Test 4	
57.	Final examination review	
58.	Final examination review	