

Differential Equations and Linear Algebra- Math 2250
Spring 2015 - Section 7

Week-by-week guide

- Week 1: 1.1-4 Differential equations, mathematical models, integral as general and particular solutions, slope fields, separable differential equations.

Recommended HW:

1.1: 1-4, 8-10, 15-18, 25-26, 27-28, 30

1.2: 1-4, 8-10, 13-16, 21-22, 24, 26

1.3: 2-4, 9-10, 13-16

Graded HW:

Section 1.1: 4, 9, 15, 25, 28,30

Section 1.2: 1,2,9,15,16,21,26

Section 1.3: 2, 3,10, 13,14.

- Week 2: 1.4-5, 2.1-2 Separable equations cont., linear differential equations, circuits, mixture models, population models, equilibrium solutions and stability.

Recommended HW:

1.4: 1-4, 12-14, 20-22, 29-30, 34

1.5: 1-4, 17-18, 29, 33-34

Graded HW:

Section 1.4: 4,12,20,21, 30

Section 1.5: 1,2,17,29,33

- Week 3: 2.2-4 Equilibrium solutions and stability cont., acceleration-velocity models, numerical solutions.

Recommended HW:

2.1: 2-4, 9-10, 13-14

2.2: 3-4, 7-8, 19-20

2.3: 2-4, 10, 20

Graded HW:

2.1: 2,3,9,13

2.2: 3,7,20

2.3: 3,20.

- Week 4: 2.5-6, 3.1 Numerical solutions cont., linear systems; **Super quiz over chapters 1-2**

Recommended HW:

2.4: 2, 6, 12

2.5: 2, 6, 16

2.6: 4, 8, 26

- Week 5: 3.1-4 Linear systems, matrices, Gaussian elimination, reduced row echelon form, matrix operations Rules

Recommended HW:

3.1: 3-4, 11-14, 23-24
 3.2: 5-6, 11-14, 21-22, 23-24
 3.3: 3-6, 13-14, 17-18, 32, 34

Graded HW:

3.1: 4, 11, 12, 23
 3.2: 5, 12, 13, 21, 23
 3.3: (moved to next week)

- Week 6: 3.5-3.6 Matrix inverses, determinants, review; **Midterm exam 1 covering material from weeks 1-5**

Recommended HW:

3.4: 1-2, 5-8, 11-12, 17-18, 23-24
 3.5: 3-4, 11-12, 21-24, 30, 34

Graded HW:

3.3: 4, 5, 14, 18, 34
 3.4: 1, 7, 12, 17, 23
 3.5: 4, 11, 22, 34

- Week 7: 4.1-4 Vector spaces, linear combinations in $\mathbb{R}^n$, span and independence, subspaces, bases and dimension

Recommended HW:

3.6: 1-4, 7-8, 13-14
 4.1: 1-8, 13-14, 17-20, 25-26, 29-32

Graded HW:

3.6: 2, 7, 13
 4.1: 2, 4, 6, 13, 18, 26, 31

- Week 8: 5.1-3 Second-order linear DEs, general solutions, superposition, homogeneity and constant coefficients

Recommended HW:

4.2: 1-16, 30
 4.3: 3-4, 11-12, 19-20, 23-24

4.4: 1-4, 9-10, 13-14, 17-18, 27-28

Graded HW:

4.2: 1,3,4,5,8,9,13,30

4.3: 3, 11, 19, 24

4.4: 2,10,14,17,27

- Week 9: 5.4-6 Mechanical vibrations, pendulum model, particular solutions to non-homogeneous problems, forcing and resonance

Recommended HW:

5.1: 3-10, 17-18, 25-26

5.2: 1-4, 9-10, 13-14, 21-22, 26

5.3: 7-12, 23-24, 35-40

Graded HW:

5.1: 5,7,9, 18, 26

5.2: 1,4,9,13,21,26

5.3: 11,12,24,36,37,40

- Week 10: 10.1-4 Laplace transforms, solving IVPs with transforms, partial fractions and translations; **Super quiz**

Recommended HW:

5.4: 1-2, 13-16

5.5: 1-4, 17-20, 29-34, 47-48

Graded HW:

5.4: 1, 13,16

5.5: 4, 17,18,20, 32,34, 48

- Week 11: 10.4-5 Unit steps, convolutions; **Midterm exam 2 covering weeks 6-10 material**

Recommended HW:

5.6: 1-2, 9-10, 13-14

10.1: 1-10, 23-30, 37-38

10.2: 1-6

10.3: 3-6, 11-14, 21-22, 27-28, 37-38

Graded HW:

5.6: 1,2, 10, 13

10.1: 1,3,5,8,9, 25, 26, 37

10.2: 1,4,5

10.3: 3,4, 12, 22, 28, 38

- Week 12: 6.1-2, 7.1 Eigenvalues and eigenvectors, diagonalization, first-order systems of ODE Parts.

Recommended HW:

10.4: 1-4, 7-10

6.1: 1-4, 15-16, 27-28, 33-34

6.2: 7-10, 17-18, 31-32

Graded HW:

10.4: 1,2, 7

6.1: 1,2,4,15,28,33

6.2: 7,8,9,18,31

- Week 13: 7.2-4 , 9.1-9.2

Recommended HW:

7.1: 1-2, 7-8, 13-14

7.2: 3-4, 12-14, 18, 23, 27

7.3: 1-2, 13-14, 17-18

7.4: 1-2, 8, 12

Graded HW:

7.1: 2,8,14

7.2: 3, 12, 18, 27

7.3: 1,14,17

7.4: 2, 12

- Week 14: Monday- Review, Wednesday- Reading Day.
- Week 15: **Finals week: comprehensive final exam.**