Math 0290: Differential Equations Summer 2016
Schedule

WEEK 1:

Relevant practice problems: 1.1: 1,3; 2.1: 3,13,15; 2.2: 9,11,17,23; 2.3: 8 (you may use section 2.3 equations 3.5-3.7),11; 2.4: 3,15,39

Tuesday, May 16: Lecture on 1.1 Differential equation models, 2.1 Differential equations and solutions. 2.2 Solutions to separable equations

Thursday, May 18: Lecture on 2.3 models of motion, 2.4 Linear equations

WEEK 2:

Class canceled this week

WEEK 3:

Relevant practice problems: 2.5: 5;2.7: 3,7

Tuesday, May 30: Lecture on 2.5 mixing problems, 2.7 Existence and uniqueness of solutions

Thursday, June 1: Quiz 1 on sections 2.2, 2.3, 2.4, 2.5, 2.7. Lecture on 3.1 Modeling population growth, 3.3 Personal finance

WEEK 4:

Relevant practice problems: 3.1: 10,13; 3.3: 3,5; 3.4: 4,12,21

Tuesday, June 6: Lecture on 3.4 Electrical circuits, 4.1 Second order equations

Thursday, June 8: Quiz 2 on sections 3.1, 3.3, 3.4. Lecture on 4.2 Second order equations and systems, 4.3 Linear, homogeneous equations with constant coefficients

WEEK 5:

Relevant practice problems: 4.3: 1,10,18; 4.4: 7,11,13,20(a); 4.5: 1,2,19,21

Tuesday, June 13: Lecture on 4.4 Harmonic motion, 4.5 Method of undetermined coefficients

Thursday, June 15: Quiz 3 on sections 4.3, 4.4, 4.5. Lecture on 4.6 Variation of parameters, 4.7 Forced harmonic motion

WEEK 6:

Relevant practice problems: 4.6: 3,5,7; 4.7: 3,13

Tuesday, June 20: Quiz 4 on section 4.6. Lecture on 5.1 Laplace transform, 5.2 Properties of the Laplace transform. Review for Midterm 1 if time permits.

Thursday, June 22: Midterm 1 on topics from quizzes 1–4

WEEK 7:

Relevant practice problems: 5.1: 5,8,25,29; 5.2: 6,7; 5.3: 11,19; 5.4: 1,19,21

Tuesday, June 27: Lecture on 5.3 Inverse Laplace transform, 5.4 Solving ODEs with the Laplace transform

Thursday, June 29: Quiz 5 on sections 5.1,5.2,5.3,5.4. Lecture on 5.5 Discontinuous forcing terms, 5.6 Delta function, 5.7 Convolutions

WEEK 8:

Relevant practice problems:5.5: 6,10,27; 5.6: 3,5; 5.7: 7,9

Tuesday, July 4: No class.

Thursday, July 6: Lecture on Chapter 7 matrix algebra boot camp, 8.1 Intro-

duction to systems, 8.2 Geometric interpretation of systems. Review for midterm 2 if time permits.

WEEK 9:

Relevant practice problems: 7.1: 1,3; 7.3: 1,3; 7.4:3,4

Decide on extra credit presentation topics by the end of this week.

Tuesday, July 11: Midterm 2 on sections 5.1–5.7

Thursday, July 13: Lecture on 9.2 Planar systems, 9.3 Phase plane portraits.

WEEK 10:

Relevant practice problems: 8.1: 1,3,11,13; 8.2: 21,23,25; 8.3: 3,5; 9.1: 1,16,17; 9.2: 1,7,17; 9.3: 16,20

Tuesday, July 18: Quiz 6 on matrix algebra, Lecture on 8.3 Qualitative analysis, 9.1 Linear systems of constant coefficients

Thursday, July 20: Quiz 7 on sections 8.1,8.2,8.3,9.1,9.2,9.3. Lecture on 10.1 Nonlinear systems, 10.2 Long-term behavior of solutions

WEEK 11:

Relevant practice problems: 10.1: 1,2,19bc; 10.2: 1,6; 10.3: 1,2,9,10; 10.4: 1,12

Tuesday, July 25: Lecture on 10.3 Invariant sets and use of nullclines, 10.4 Long-term behavior of solutions to planar systems. Run through your extra credit presentation with me before Thursday.

Thursday, July 27: Quiz 8 on sections 10.1, 10.2, 10.3, 10.4. Extra credit presentations.

WEEK 12:

Tuesday, August 1: Review

Thursday, August 3: Final on all quiz topics and relevant practice problems. Usual class time and place 6-7:45pm, Alexander J. Allen Hall 103.