Math 46

Textbook: Elementary Differential Equations (with Boundary Value Problems) by William F. Trench

https://digitalcommons.trinity.edu/mono/9/

Week 1:
- Day 1: (Introduction, 1.1 Applications Leading to Differential Equations)
  1.2 Basic Concepts
- Day 2: 1.3 Direction Fields for First Order Equation

Week 2:
- Day 1: 2.1 Linear Equations
- Day 2: 2.2 Separable Equations

Week 3:
- Day 1: 2.4 Transformation of Nonlinear Equations into Separable Equations
  (2.3 Existence and Uniqueness of Solutions of Nonlinear Equations)
- Day 2: 2.5 Exact Equations
  2.6 Integrating Factors

Week 4:
- Day 1: 3.1 Euler's Method
  (3.2 The Improved Euler Method and Related Methods)
  **Lecturers please focus on the algorithm side of the methods, and show students how to use the methods to get approximations to differential equations. No coding problems using advanced coding software is recommended.*
- Day 2: 4.1, 4.2, 4.3 Applications
  4.5 Applications to Curves

Week 5:
- Day 1: Review
- Day 2: Midterm

Week 6:
- Day 1: 5.1 Homogeneous Linear Equations (Webwork 8)
  5.2 Constant Coefficient Homogeneous Equations (Webwork 9)
- Day 2: 5.2 continue…

Week 7:
- Day 1: 5.3 Nonhomogeneous Linear Equations
- Day 2: 5.4 The Method of Undetermined Coefficients

Week 8:
- Day 1: 5.5 The Method of Undetermined Coefficients
- Day 2: 5.6 Reduction of Order
  5.7 Variation of Parameters

Week 9:
- Day 1: 9.1 Introduction to Linear Higher Order Equations
- Day 2: 9.2 Higher Order Constant Coefficient Homogeneous Equations

Week 10:

Day 1: 9.3 Undetermined Coefficients for Higher Order Equations

6.1 6.2, Application of Linear Second Order Equations

Day 2: Final Review