MATH 240-01

Subject Index and Textbook Locations

I. For the 1st Term Exam

Examples of DE: 1.1
Mathematical Modeling with DE: 1.1
Direction Fields: 1.1
Solution Curves: 1.2
Classifications of DE: 1.3

1st Order DE. The Method of Integrating Factor: 2.1
1st Order DE. The Method of Variation of Parameters: page 41 (problems 38-42)
Separable Equations: 2.2
Homogeneous DE: page 49 (problems 30-38)
Bernoulli DE: page 77 (problems 27-31)
Autonomous DE and Population Dynamics: 2.5
Critical Thresholds of Population Growth: 2.5
Logistic Growth with a Threshold: 2.5
Semistable Equilibrium Solutions: page 88 (problem 7)
Bifurcation Points: pages 92 (problems 25-27)
Exact DE and Integrating Factor: 2.6
Special 2nd Order DE Reducible to 1st Order DE (Riccati, dependent variable missing, independent variable missing): pages 133-135 (problems 33-51)
Applications of 1st Order DE (mixing, compound interest, chemicals in a pond, escape velocity): 2.3
Differences between Linear and Nonlinear 1st Order DE: 2.4

II. For the 2nd Term Exam

Homogeneous 2nd Order Linear DE with constant coefficients: 3.1, 3.2, 3.4
The Wronskian: 3.2
Change of Variables and Euler Equation: pages 164-165
Reduction of Order: 3.4
General theory of n-th Order Linear DE with constant coefficients: 4.1
Homogeneous n-th Order Linear DE with constant coefficients: 4.2
Exact and Adjoint 2nd Order Linear DE: pages 156-157
Non-Homogeneous 2nd Oder Linear DE. Method of Undetermined Coefficients: 3.5
Non-Homogeneous 2nd Oder Linear DE. Method of Variation of Parameters: 3.6
Non-Homogeneous n-th Order Linear DE: 4.3 and 4.4
Method of Annihilators: pages 237-238.
Free mechanical vibrations (the spring-mass system): 3.7
Forced mechanical vibrations (the spring-mass system): 3.8

N.B. At the end of each section there are plenty of questions that you may solve as a preparation for the exams.