

## MATH 250 SEQUENCE OF TOPICS

From *Differential Equations: Theory, Technique, and Practice*, 3rd Edition, by Steven Krantz

§	TOPIC	ASSIGNMENT
<b>1</b>	<b>What is a Differential Equation?</b>	
1.3	The Nature of Solutions	1abeg, 2acd, 3, 4, 5, 6, 7
<b>2</b>	<b>Solving First-Order Equations</b>	
2.1	Separable Equations	1, 2, 3, 4
2.2	First-Order Linear Equations	1abcdfgj, 2bcdf, 3abd, 5, 7, 8, 9
2.3	Exact Equations	1–19 odd
2.4	Orthogonal Trajectories & Families of Curves	1, 2, 3 (just find the DE), 6
2.5	Homogeneous Equations	1, 2
2.6	Integrating Factors	1, 2, 3
2.7	Reduction of Order	1, 2
<b>4</b>	<b>Second-Order Linear Equations</b>	
4.1	Second-Order Linear Equations with Constant Coefficients	1abcdefghikmnoq, 2, 4, 5acegi, 6abdeh
4.2	The Method of Undetermined Coefficients	1, 2, 3, 4
4.3	The Method of Variation of Parameters	1, 2, 4, 5
4.4	Using a Known Solution to Find Another	1, 2, 3, 4, 5, 6, 7, 8
4.5	Higher Order Equations	1, 3, 5, 7, 8, 9, 11, 13, 15, 17, 18
<b>5</b>	<b>Applications of the Second-Order Theory</b>	
5.1*	Free Mechanical Vibrations	1–6 in §5.1 of online book
5.2*	Forced Mechanical Vibrations	1, 2 in §5.2 of online book
<b>6</b>	<b>Power Series Solutions</b>	
6.1	Review of Power Series	1, 2, 3, 6b, 7
6.2	Series Solutions of First-Order Equations	1, 2, 5 (just use the approach on p. 130)
6.3	Ordinary Points	1, 2, 3, 4, 7 + p. 161: 1
<b>8</b>	<b>Laplace Transforms</b>	
8.0	Introduction	1, 2, 3, 4, 5 + p. 242: 1, 2
8.1	Applications to Differential Equations	1, 2, 3, 5, 6 + p. 242: 3bcd, 4
8.2	Derivatives & Integrals	1, 2, 3, 4 + p. 242: 3a
8.3	Convolutions	2, 5 + 1–8 in §6.8 of online book
6.7*	Piecewise-Defined Nonhomogeneities	1–5 in §6.7 of online book
6.9*	Impulse Functions and the Dirac Delta	1–4 in §6.9 of online book

\* This section is in *Differential Equations: Introduction*, which is our “online book” at the course website.