COURSE OUTLINE FOR MATH 436: DISCRETE MATHEMATICS

Textbook: Dossey, Otto, Spence, and Vanden Eynden
Discrete Mathematics,

	# of weeks
Chapter 1: An Introduction to Combinatorial Problems and Techniques	1

Have students read Sections 1.1 The Time to Complete a Project, 1.2 A Matching Problem, and 1.3 A Knapsack Problem to get the flavor of the course. Spend time on Section 1.4 Algorithms and Their Efficiency.

Chapter 2: Sets, Relations, and Functions	1

Spend time on Sections 2.6 Mathematical Induction and 2.7 Applications.

Chapter 3: Graphs	4.5

Cover all, as this is core material:
Sections 3.1 Graphs and Their Representations
3.2 Paths and Circuits
3.3 Shortest Paths and Distance
3.4 Coloring a Graph
3.5 Directed Graphs and Multigraphs
Now is a good time to do also Section 9.4 Finite State Machines.

Chapter 4: Trees	4.5

Also core material, so cover:
Sections 4.1 Properties of Trees
4.2 Spanning Trees
4.3 Minimal and Maximal Spanning Trees
4.5 Rooted Trees
4.6 Binary Trees and Traversals
But skip Sections 4.4 Depth-First Search and 4.7 Optimal Binary Trees and Binary Search Trees.

Chapter 8: Recurrence Relations and Generating Functions	2

Cover only:
Sections 8.1 Recurrence Relations
8.2 The Method of Iteration
8.3 Linear Difference Equations with Constant Coefficients

If there is time remaining, cover selected portions of:
Sections 7.1 Pascal's Triangle and the Binomial Theorem
7.2 Three Fundamental Principles
or supplement with materials
on: Traveling Salesman problem,
Nonhomogeneous recurrences (using undetermined coefficients)
"Divide and Conquer" recurrences

Testing and Review	1
Total	14