Chapter 7
1. Fibonacci numbers
2. Generating functions, mainly for combinations
3. Exponential generating function, mainly for permutations
4. Linear homogeneous recurrence relations and generating functions
5. Catalan numbers, defined by a recurrence relation

Chapter 8
1. more on Catalan numbers
2. Stirling numbers of the first and second kind: definition in terms of polynomials
3. Stirling numbers: combinatorial properties
4. Recurrence relations for Stirling numbers
5. (See the notes on the web site regarding Stirling numbers)
6. Partitions
7. Partitions and Young diagrams, duality

Chapter 11
1. Basic concepts of graph theory
2. walks, trails, paths
3. Eulerian cycles: necessary and sufficient condition
4. Hamiltonian cycles
5. The Ore property and Hamiltonian cycles
6. Biptartite Graphs
7. Trees: various equivalent definitions
8. Spanning trees: existence
9. Breadth first and depth first spanning trees

Chapter 12
1. $k$-colorings of graphs
2. the chromatic number
3. Planar graphs
4. The four-color theorem