Review topics for Final Exam

Chapter 5: Counting problems

- Venn diagrams
- Inclusion-exclusion principle
- De'Morgan's laws
- Multiplication principle
- Permutations and combinations
- Advanced counting problems
- Binomial Theorem

Chapter 6: Probabilities using counting

- Experiments, outcomes, sample spaces, events
- Odd in favor/against
- Calculating probabilities of events
- Conditional probability & independent events
- Tree diagrams
- Baye's Theorem

Chapter 7: Probability & Statistics

- Normal distribution and Z-scores
- Frequency tables
- Binomial trials
- Approximation of binomial trials by normal distribution
- Mean & Standard deviation

Chapter 2: Matrices

- Matrix multiplication/addition
- Systems of linear equalities/augmented matrices/how many solutions: infinitely many, no solution, unique solution
- Gauss-Jordan elimination and reduced row echelon form
- Inverses
- Input-output analysis

Chapter 3: Linear programming

- Graphing the feasible set: drawing lines and shading the right half space
- Finding the corner where the objective function is maximized/minimized

Chapter 8: Markov processes

- Transition matrix
- Absorbing stochastic matrix
- Fundamental and stable matrix

Chapter 9: Game theory

- Payoff matrices
- Strictly determined games/saddle points/optimal pure strategies
- Expected value
- Optimal mixed strategies