**Textbook:** [Y&G] R. D. Yates and D. J. Goodman, Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers, 2nd ed., Wiley, 2004. Call No. QA273 Y384 2005.

Topics [Y&G]		
1. Probability and You		
a. Randomness		
b. Background on Some Frequently Used		
Examples		
i. Coins		
ii. Dice		
iii. Cards		
c. A Glimpse at Probability Theory		
i. Random experiment	p. 7-8	
ii. Outcomes and Sample space	p. 8	
iii. Event	p. 8-9	
iv. Relative Frequency	p. 12-13, 67	
v. Law of Large Numbers	p. 12-13, 67	
vi. Using MATLAB to generate and analyze	p. 40	
the sequence of coin flipping	[Y&G] uses the rand and hist	
	commands.	
2. Review of Set Theory	Section 1.1 Set Theory	
a. Venn diagram, basic set operations /identities	p. 2	
(e.g. de Morgan Laws)		
b. Disjoint sets	p. 5	
c. Partition	p. 10-11	
	(This is called <b>event space</b> in [Y&G])	
d. Cardinality, Finite set, Countable Sets,		
Countably Infinite Sets, Uncountable Sets,		
Singleton		
<ul> <li>i. Useful for checking whether a random variable is discrete or continuous</li> </ul>		
	n 0	
<ul><li>e. Terminology of set theory and probability.</li><li>3. Classical Probability</li></ul>	p. 9	
a. Assumptions		
b. Basic properties		
4. Enumeration / Combinatorics / Counting	Section 1.8 Counting Methods	
a. Four Principles	Couldn't I o counting Wictious	
i. Addition		
ii. Multiplication	p. 28	
iii. Subtraction	r -	
iv. Division		
b. Four Kinds of Counting Problems		
i. Ordered sampling with replacement	p. 31-32	
ii. Ordered sampling without replacement	p. 29	
( <i>r</i> -permutation)	·	
Factorial and permutation	p. 29	

2. Permutations with types and multinomial coefficient  iii. Unordered sampling of without replacement (r-combinations)  iv. Unordered sampling with replacement  1. bars and stars argument  2. Binomial Theorem and Multinomial Theorem  d. Famous Example: Galileo and the Duke of Tuscany  e. Application: Success Runs  5. Probability Foundations  Section 1.3 Probability Axioms Section 1.4 Some Consequences of the Axioms  a. Kolmogorov's Axioms for Probability  b. Consequences of Axioms  p. 12  In [Y&G], the probability measure P() is represented by P[].  b. Consequences of Axioms  p. 12  In [Y&G], the probability measure P() is represented by P[].  b. Consequences of Axioms  p. 13, 15-16  Note that in [Y&G] with is pointed out that we can write P[AB] or P[A,B] to represent P[A∩B]  p. 14  6. Event-based Independence and Conditional Probability  a. Event-based Conditional Probability  i. Tree diagram  Section 1.7 Sequential Experiments and Tree Diagrams p. 24-28  1. Compact form  b. Event-based Independence  Section 1.6 Independence			
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