

CONTENTS

<i>Preface</i>	v	
CHAPTER 1	PROBABILITY SPACES	1
1.1	Introduction	1
1.2	Mathematical Models and Sample Spaces	3
1.3	Events	8
1.4	Probability Axioms	16
1.5	Conditional Probability; Bayes's Theorem	24
1.6	Independence	31
1.7	Approaches to Assigning Probabilities	38
1.8	Summary	44
CHAPTER 2	FINITE SAMPLE SPACES	46
2.1	Probability Structure	46
2.2	Combinatorial Problems	51
2.3	Repeated Bernoulli Trials	60
2.4	Occupancy Problems*	68
2.5	Summary	71
CHAPTER 3	RANDOM VARIABLES	73
3.1	Basic Concepts	73
3.2	Induced Probability	77
3.3	Discrete Families	87
3.4	Continuous Distributions	99
3.5	Normal Family	110
3.6	Summary	119

* Optional.

CHAPTER 4	EXPECTATION	<i>122</i>
	4.1 Expected Value of a Random Variable	<i>122</i>
	4.2 Functions of Random Variables	<i>128</i>
	4.3 Distribution Characteristics	<i>139</i>
	4.4 Moment-Generating Functions*	<i>154</i>
	4.5 Summary	<i>167</i>
<hr/>		
CHAPTER 5	JOINT DISTRIBUTIONS	<i>169</i>
	5.1 Introduction	<i>169</i>
	5.2 Two-Dimensional Random Pairs	<i>169</i>
	5.3 Joint and Marginal Distributions	<i>179</i>
	5.4 Independence of Random Variables	<i>189</i>
	5.5 Joint Moments	<i>198</i>
	5.6 Conditional Distributions and Conditional Moments	<i>206</i>
	5.7 Extensions to Higher Dimensions*	<i>223</i>
	5.8 Summary	<i>232</i>
<hr/>		
CHAPTER 6	ANALYTICAL METHODS FOR JOINT MODELS	<i>234</i>
	6.1 Introduction	<i>234</i>
	6.2 Functions of Random Pairs	<i>235</i>
	6.3 The Change-of-Variable Technique*	<i>244</i>
	6.4 The Linear Correlation Coefficient and Joint Moment-Generating Functions*	<i>253</i>
	6.5 The Bivariate Normal Distribution*	<i>264</i>
	6.6 Multinomial Distributions*	<i>277</i>
	6.7 The Poisson Process	<i>284</i>
	6.8 Markov Chains	<i>293</i>
	6.9 Summary	<i>304</i>
<hr/>		
CHAPTER 7	SAMPLING AND ASYMPTOTIC DISTRIBUTIONS	<i>307</i>
	7.1 Samples and Sample Moments	<i>307</i>
	7.2 Limiting Distributions	<i>318</i>
	7.3 The t - and F -Distributions*	<i>326</i>
	7.4 Order Statistics*	<i>334</i>

* Optional.

7.5	Approximations	344
7.6	Summary	356
<hr/>		
APPENDIX	TABLES OF COMMON DISTRIBUTIONS	359
Table 1	Binomial Mass Functions $b(n, p)$	359
Table 2	Values of the Poisson Mass Function	366
Table 3	Normal CDF	375
Table 4	Values of the t -CDF	380
Table 5	Values of the F-CDF	381
Table 6	Chi-square CDF	387
<hr/>		
ANSWERS TO SELECTED APPLICATION EXERCISES		390
<hr/>		
INDEX		398