

Contents

Notation	xiii
CHAPTER I	
Functionals on Stochastic Processes	1
1. Stochastic Processes as Random Functions	1
Notes	4
Problems	4
CHAPTER II	
Uniform Convergence of Empirical Measures	6
1. Uniformity and Consistency	6
2. Direct Approximation	8
3. The Combinatorial Method	13
4. Classes of Sets with Polynomial Discrimination	16
5. Classes of Functions	24
6. Rates of Convergence	30
Notes	36
Problems	38
CHAPTER III	
Convergence in Distribution in Euclidean Spaces	43
1. The Definition	43
2. The Continuous Mapping Theorem	44
3. Expectations of Smooth Functions	48
4. The Central Limit Theorem	50
5. Characteristic Functions	54
6. Quantile Transformations and Almost Sure Representations	57
Notes	61
Problems	62

CHAPTER IV	
Convergence in Distribution in Metric Spaces	64
1. Measurability	64
2. The Continuous Mapping Theorem	66
3. Representation by Almost Surely Convergent Sequences	71
4. Coupling	76
5. Weakly Convergent Subsequences	81
Notes	85
Problems	86
 CHAPTER V	
The Uniform Metric on Spaces of Cadlag Functions	89
1. Approximation of Stochastic Processes	89
2. Empirical Processes	95
3. Existence of Brownian Bridge and Brownian Motion	100
4. Processes with Independent Increments	103
5. Infinite Time Scales	107
6. Functionals of Brownian Motion and Brownian Bridge	110
Notes	117
Problems	118
 CHAPTER VI	
The Skorohod Metric on $D[0, \infty)$	122
1. Properties of the Metric	122
2. Convergence in Distribution	130
Notes	136
Problems	137
 CHAPTER VII	
Central Limit Theorems	138
1. Stochastic Equicontinuity	138
2. Chaining	142
3. Gaussian Processes	146
4. Random Covering Numbers	149
5. Empirical Central Limit Theorems	155
6. Restricted Chaining	160
Notes	165
Problems	167
 CHAPTER VIII	
Martingales	170
1. A Central Limit Theorem for Martingale-Difference Arrays	170
2. Continuous Time Martingales	176
3. Estimation from Censored Data	182
Notes	185
Problems	186

APPENDIX A	
Stochastic-Order Symbols	189
APPENDIX B	
Exponential Inequalities	191
Notes	193
Problems	193
APPENDIX C	
Measurability	195
Notes	200
Problems	200
References	201
Author Index	209
Subject Index	211