

TABLE OF CONTENTS

REFACE	v
INTRODUCTION	
CHAPTER 1. RANDOMNESS	1
1.1 Fundamentals	1
1.2 Random Number Generation	3
Appendix 1: Figures	27
CHAPTER 2. SIMULATION	31
2.1 Simple Monte Carlo	31
2.2 Assignments	37
2.3 Randomness and Monte Carlo	37
2.4 Improved Monte Carlo	44
2.5 Quadrature	50
2.6 Conclusions	55
CHAPTER 3. LIMIT THEOREMS	56
3.1 Limits of Convolutions	56
3.2 An Insurance Model	59
3.3 Approximation	62
Appendix 3: Figures	65
CHAPTER 4. STOCHASTIC PROCESSES	73
4.1 General Properties	73
4.2 An Investment Example	75
4.3 Stationary Stochastic Processes	76
4.4 Markov Chains	79
Appendix 4: Figures	84
CHAPTER 5. PARTICULAR STOCHASTIC PROCESSES	92
5.1 A Growth Model	92
5.2 The Random Phase Model	94

5.3 Renewal Processes	95
Appendix 5: Figures	98
CHAPTER 6. DECISION PROBLEMS	101
6.1 Generalities	101
6.2 A Stochastic Approximation Problem	103
6.3 An Insurance Game	104
6.4 Design of Experiments	105
6.5 A Search Problem	108
Appendix 6: Figures	111
CHAPTER 7. A COMPUTATIONAL APPROACH TO STATISTICS	123
7.1 Statistical Computing	123
7.2 Analysis of Variance	125
7.3 Non-Standard Situations	126
7.4 Bayesian Estimation	128
Appendix 7: Figures	130
CHAPTER 8. TIME-SERIES ANALYSIS	133
8.1 Estimation of the Spectral Density	133
8.2 The Fast Fourier Transform	138
8.3 Regression Analysis of Time Series	140
8.4 Signal Detection	142
Appendix 8: Figures	146
REFERENCES	151
INDEX	153