

Contents



UNIVERSIDAD NACIONAL DE ENTRE RÍOS
FACULTAD DE INGENIERÍA
CENTRO DE MEDIOS
BIBLIOTECA

39 16

| | |
|--|----------|
| Preface to the Second Edition | x |
| Preface | xii |
| Part 1 Optimization Models | 1 |
| 1 One-Variable Optimization | 3 |
| 1.1 The Five-Step Method | 3 |
| 1.2 Sensitivity Analysis | 9 |
| 1.3 Sensitivity and Robustness | 14 |
| 1.4 Exercises | 17 |
| 1.5 Further Reading | 19 |
| 2 Multivariable Optimization | 21 |
| 2.1 Unconstrained Optimization | 21 |
| 2.2 Lagrange Multipliers | 32 |
| 2.3 Sensitivity Analysis and Shadow Prices | 44 |
| 2.4 Exercises | 54 |
| 2.5 Further Reading | 59 |

| | | |
|----------------------------------|---|------------|
| 3 | Computational Methods for Optimization | 61 |
| 3.1 | One-Variable Optimization | 61 |
| 3.2 | Multivariable Optimization | 71 |
| 3.3 | Linear Programming | 83 |
| 3.4 | Discrete Optimization | 101 |
| 3.5 | Exercises | 115 |
| 3.6 | Further Reading | 123 |
| Part 2 Dynamic Models | | 125 |
| 4 | Introduction to Dynamic Models | 127 |
| 4.1 | Steady-State Analysis | 127 |
| 4.2 | Dynamical Systems | 133 |
| 4.3 | Discrete-Time Dynamical Systems | 141 |
| 4.4 | Exercises | 148 |
| 4.5 | Further Reading | 152 |
| 5 | Analysis of Dynamic Models | 153 |
| 5.1 | Eigenvalue Methods | 153 |
| 5.2 | Eigenvalue Methods for Discrete Systems | 160 |
| 5.3 | Phase Portraits | 165 |
| 5.4 | Exercises | 184 |
| 5.5 | Further Reading | 190 |
| 6 | Simulation of Dynamic Models | 191 |
| 6.1 | Introduction to Simulation | 191 |
| 6.2 | Continuous-Time Models | 197 |
| 6.3 | The Euler Method | 203 |
| 6.4 | Chaos and Fractals | 212 |
| 6.5 | Exercises | 230 |
| 6.6 | Further Reading | 244 |
| Part 3 Probability Models | | 247 |
| 7 | Introduction to Probability Models | 249 |
| 7.1 | Discrete Probability Models | 249 |
| 7.2 | Continuous Probability Models | 254 |

| | | |
|-----|----------------------------------|-----|
| 7.3 | Introduction to Statistics | 259 |
| 7.4 | Exercises | 264 |
| 7.5 | Further Reading | 270 |
| 8 | Stochastic Models | 272 |
| 8.1 | Markov Chains | 272 |
| 8.2 | Markov Processes | 283 |
| 8.3 | Linear Regression | 295 |
| 8.4 | Exercises | 304 |
| 8.5 | Further Reading | 312 |
| 9 | Simulation of Probability Models | 313 |
| 9.1 | Monte Carlo Simulation | 313 |
| 9.2 | The Markov Property | 320 |
| 9.3 | Analytic Simulation | 330 |
| 9.4 | Exercises | 339 |
| 9.5 | Further Reading | 343 |
| | Afterword | 345 |
| | Index | 349 |