

1. Record Nr.	UNINA9910139250203321
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Titolo	Difference and differential equations with applications in queueing theory [[electronic resource] /] / Aliakbar M. Haghighi, Dimitar P. Mishev
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley & Sons, Inc., c2013
ISBN	1-118-40067-4 1-118-40065-8 1-118-40064-X
Descrizione fisica	1 online resource (420 p.)
Classificazione	MAT029000
Altri autori (Persone)	MishevD. P (Dimitar P.)
Disciplina	519.8/2
Soggetti	Difference equations Differential equations Queueing theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title page; Copyright page; Contents; Preface; CHAPTER ONE: Probability and Statistics; 1.1. Basic Definitions and Concepts of Probability; 1.2. Discrete Random Variables and Probability Distribution Functions; 1.3. Moments of a Discrete Random Variable; 1.4. Continuous Random Variables; 1.5. Moments of a Continuous Random Variable; 1.6. Continuous Probability Distribution Functions; 1.7. Random Vector; 1.8. Continuous Random Vector; 1.9. Functions of a Random Variable; 1.10. Basic Elements of Statistics; 1.10.1. Measures of Central Tendency; 1.10.2. Measure of Dispersion 1.10.3. Properties of Sample Statistics1.11. Inferential Statistics; 1.11.1. Point Estimation; 1.11.2. Interval Estimation; 1.12. Hypothesis Testing; 1.13. Reliability; Exercises; CHAPTER TWO: Transforms; 2.1. Fourier Transform; 2.2. Laplace Transform; 2.3. Z-Transform; 2.4. Probability Generating Function; 2.4.1. Some Properties of a Probability Generating Function; Exercises; CHAPTER THREE: Differential Equations; 3.1. Basic Concepts and Definitions; 3.2. Existence and Uniqueness; 3.3. Separable Equations; 3.3.1. Method of Solving Separable Differential Equations

3.4. Linear Differential Equations 3.4.1. Method of Solving a Linear First-Order Differential Equation; 3.5. Exact Differential Equations; 3.6. Solution of the First ODE by Substitution Method; 3.6.1. Substitution Method; 3.6.2. Reduction to Separation of Variables; 3.7. Applications of the First-Order ODEs; 3.8. Second-Order Homogeneous ODE; 3.8.1. Solving a Linear Homogeneous Second-Order Differential Equation; 3.9. The Second-Order Nonhomogeneous Linear ODE with Constant Coefficients; 3.9.1. Method of Undetermined Coefficients; 3.9.2. Variation of Parameters Method 3.10. Miscellaneous Methods for Solving ODE 3.10.1. Cauchy-Euler Equation; 3.10.2. Elimination Method to Solve Differential Equations; 3.10.3. Application of Laplace Transform to Solve ODE; 3.10.4. Solution of Linear ODE Using Power Series; 3.11. Applications of the Second-Order ODE; 3.11.1. Spring-Mass System: Free Undamped Motion; 3.11.2. Damped-Free Vibration; 3.12. Introduction to PDE: Basic Concepts; 3.12.1. First-Order Partial Differential Equations; 3.12.2. Second-Order Partial Differential Equations; Exercises; CHAPTER FOUR: Difference Equations; 4.1. Basic Terms 4.2. Linear Homogeneous Difference Equations with Constant Coefficients 4.3. Linear Nonhomogeneous Difference Equations with Constant Coefficients; 4.3.1. Characteristic Equation Method; 4.3.2. Recursive Method; 4.4. System of Linear Difference Equations; 4.4.1. Generating Functions Method; 4.5. Differential-Difference Equations; 4.6. Nonlinear Difference Equations; Exercises; CHAPTER FIVE: Queueing Theory; 5.1. Introduction; 5.2. Markov Chain and Markov Process; 5.3. Birth and Death (B-D) Process; 5.4. Introduction to Queueing Theory; 5.5. Single-Server Markovian Queue, M/M/1 5.5.1. Transient Queue Length Distribution for M/M/1

#### Sommario/riassunto

"This book features a collection of topics that are used in stochastic processes and, particularly, in queueing theory. Differential equations, difference equations, and Markovian queues (as they relate to systems of linear differential difference equations) are presented, and the relationship between the methods and applications are thoroughly addressed"--