

1. Record Nr.	UNINA9910789456603321
Autore	Whitaker Stephen
Titolo	Fundamental principles of heat transfer / / Stephen Whitaker
Pubbl/distr/stampa	New York : , : Pergamon Press Inc., , 1977 ©1977
ISBN	1-4831-5943-4
Descrizione fisica	1 online resource (575 p.)
Disciplina	536/.2
Soggetti	Heat - Transmission
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 at the end of each chapters and indexes.
Nota di contenuto	Front Cover; Fundamental Principles of Heat Transfer; Copyright Page; Table of Contents; Preface; Nomenclature; The Author; Design Problem I; Chapter 1. Introduction; 1.1 The Continuum Postulate; 1.2 The Laws of Continuum Physics; 1.3 Mechanisms of Energy Transport; 1.4 Units; 1.5 Design Objectives; PROBLEMS; REFERENCES; Design Problem II; Chapter 2. Steady, One-Dimensional Heat Conduction; 2.1 The Fundamental Energy Postulate; 2.2 Steady Heat Conduction; 2.3 Steady, One-Dimensional Heat Conduction in Rectangular Coordinates 3.4 Numerical Solution of Two-Dimensional Heat Conduction Problems in Cylindrical Coordinates 3.5 Graphical Solution for Steady, Two-Dimensional Heat Conduction; PROBLEMS; REFERENCES; Design Problem IV; Chapter 4. Transient Heat Conduction; 4.1 The Governing Equation for Transient Heat Conduction; 4.2 Transient Heat Conduction for Bodies with Negligible Internal Resistance; 4.3 Transient Heat Conduction in a Semi-Infinite Slab; 4.4 Periodic Processes-The Semi-Infinite Slab; 4.5 Transient Heat Conduction in Rectangular Coordinates; 4.6 Transient Heat Conduction in Cylindrical Coordinates 5.7 The Momentum and Energy Equations for Laminar Boundary Layer Flow 5.8 Exact Solution of the Laminar Boundary Layer Equations; 5.9 Approximate Solution of the Laminar Boundary Layer Equations; 5.10 Dimensional Analysis for Free Convection; 5.11 Boundary Layer Analysis of Free Convection; PROBLEMS; REFERENCES; Design Problem VI; Chapter 6. Turbulent Flow; 6.1 Time Averages; 6.2 Time-Averaged

Sommario/riassunto

Fundamental Principles of Heat Transfer introduces the fundamental concepts of heat transfer: conduction, convection, and radiation. It presents theoretical developments and example and design problems and illustrates the practical applications of fundamental principles. The chapters in this book cover various topics such as one-dimensional and transient heat conduction, energy and turbulent transport, forced convection, thermal radiation, and radiant energy exchange. There are example problems and solutions at the end of every chapter dealing with design problems. This book is a valuable int
