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Mechanical Engineer's Handbook

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Subject Mechanical Engineering-Handbooks, manuals, etc.

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Brief History The Mechanical Engineer's Handbook was developed and written specifically to fill a need for mechanical engineers and mechanical engineering students throughout the world.

Scope and Coverage This handbook is comprehensive, convenient, detailed, and is a guide for the mechanical engineer. It covers a broad spectrum of critical engineering topics and helps the reader understand the fundamentals. This handbook contains the fundamental laws and theories of science basic to mechanical engineering including controls and mathematics. Covers all major areas of mechanical engineering with coverage of the definitions, formulae, examples, theory, proofs and explanations of all principle subject areas. With over 1000 pages, 550 illustrations, and 26 tables the

Mechanical Engineer's Handbook is very comprehensive, yet affordable, compact, and durable.

In its content, there are following topics and sub topics:

1. **Statics:** Vector Algebra, Centroids and Surface Properties, Moments and Couples, Equilibrium, Dry Friction
2. **Dynamics:** Fundamentals, Kinematics of a Point, Dynamics of a Particle, Planar Kinematics of a Rigid Body, Dynamics of a Rigid Body
3. **Mechanics of Materials:** Stress, Deflection and Stiffness, Fatigue
4. **Theory of Mechanisms:** Fundamentals, Position Analysis, Velocity and Acceleration Analysis, Kinetostatics
5. **Machine Components:** Screws, Gears, Springs, Rolling Bearings, Lubrication and Sliding Bearings
6. **Theory of Vibration:** Introduction, Linear Systems with One Degree of Freedom, Linear Systems with Finite Numbers of Degrees of Freedom, Machine-Tool Vibrations
7. **Principles of Heat Transfer:** Heat Transfer Thermodynamics, Conduction Heat Transfer, Convection Heat Transfer
8. **Fluid Dynamics:** Fluids Fundamentals, Hydraulics
9. **Control:** Introduction, Signals, Transfer Functions, Connection of Elements, Poles and Zeros, Steady-State Error, Time-Domain Performance, Frequency-Domain Performances, Stability of Linear Feedback Systems, Design of Closed-Loop Control Systems by Pole-Zero Methods, Design of Closed-Loop Control Systems by Frequential Methods, State Variable Models, Nonlinear Systems, Nonlinear Controllers by Feedback Linearization, Sliding Control.

Kind of Information

The purpose of this handbook is to present the reader with a teachable text that includes theory and examples. Useful analytical techniques provide the student and the practitioner with powerful tools for mechanical design. This book may also serve as a reference for the designer and as a source book for the researcher. It provides readers with a basic understanding of the subject, together with suggestions for more literature. The general approach of this book involves the presentation of a systematic explanation of the basic concepts of mechanical systems.

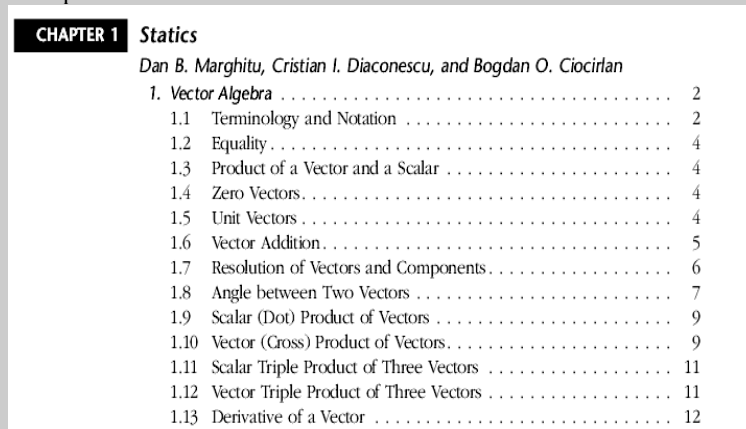
Special Features

- This handbook's special features include authoritative contributions, chapters on mechanical design, useful formulas, charts, tables, and illustrations. With this handbook the reader can study and compare the available methods of analysis. The reader can also become familiar with the methods of solution and with their implementation.
- The Handbook is an essential, practical companion for all mechanical engineering students with core coverage of nearly all relevant courses included. Also, anyone preparing for the engineering licensing examinations will find this handbook to be an invaluable aid. Useful analytical techniques provide the student and practicing engineer with powerful tools for mechanical design.

Arrangement Pattern

The content of this hand book is arranged chapter wise. It has nine chapters. Under each chapter, the related entries are arranged topic wise.

Example



CHAPTER 1 Statics
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Remarks

The Mechanical Engineer's Handbook was developed and written specifically to fill a need for mechanical engineers and mechanical engineering students throughout the world. If an engineer needs a quick reference for a wide array of information, yet does not have a full library of textbooks or does not want to spend the extra time and effort necessary to search and carry a six pound handbook, this book is for them. This book is designed to be a portable reference with a depth of coverage not found in pocketbooks of formulas and definitions and without the verbosity, high price, and excessive size of the huge encyclopedic handbooks.

Comparable Tools

- **Marks' Standard Handbook for Mechanical Engineers**
(<https://accessengineeringlibrary.com/browse/marks-standard-handbook-for-mechanical-engineers-eleventh-edition>)

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