Preface

Basic Mechanical Engineering is a course fundamental to all branches of engineering education. The objective of this course is to familiarize the students both with the core concepts as well as the scope of mechanical engineering. Mechanical engineering is a branch which has maintained and developed its links with other branches of engineering throughout the history of mankind. In the modern industrialized world, engineers from various branches of engineering work in unison to develop new technology and applications. Such collaborative contribution of mechanical engineering is manifest in the form of newer areas like automotive engineering, mechatronics, robotics, automation and control, automated manufacturing, rapid prototyping, flexible manufacturing systems, and so on.

This book attempts to cover the new syllabi in the best possible manner, without making the contents voluminous. The authors have tried their best to limit the size of the book, without compromising the quality of content or treatment of the basic concepts. This book is a natural evolution of the long teaching experience of the authors in their respective areas. Such experience is based not only on classroom and laboratory teaching, but also on conducting theoretical and practical examinations, students’ projects, industrial interactions, and background material compiled through standard textbooks on individual subjects and other teaching resources.

This book is primarily targeted at the students of the first-year undergraduate course in all branches of engineering at Rajiv Gandhi Proudyogiki Vishwavidyalaya (RGPV) also known as Rajiv Gandhi Technical University (RGTU). The contents are common to the syllabi of most of the universities in the country. The basic concepts and information presented in this book should also be useful to students appearing in various technical examinations.

The chapters in the book are not strictly related to each other. Therefore, a student may read any particular chapter without much difficulty. However, reading the chapters in a serial manner would be helpful in correlating the subject matter and concepts. The authors therefore recommend the students to read the chapters in a serial manner only, at least when they read the book for the first time. The teachers having the basic knowledge of the subject can choose to start from any chapter.

The important technical terms have been italicized in the book. These terms are the keys for understanding the topic. Such terms are explained in the text immediately following the terms, or with the help of diagrams. The students are advised to pay special attention to such terms, and understand them properly, before proceeding further. The entire book is profusely illustrated. Extreme care has been
taken to keep the diagrams as simple as possible, but complete in all manner. The students should refer to these diagrams while reading the text. The text and the diagrams have been presented in an integrated manner to deliver the subject matter. The questions at the end of each chapter are both conceptual and explanatory in nature. The students are advised to go through all of them to get a better comprehension of the subject. The solution of latest RGVP questions are given at the end of the book.

Chapter 1 deals with engineering materials, basic mechanical properties, and basic mechanical testing methods. Chapter 2 discusses basic concepts involved in measurement of mechanical quantities. This chapter also deals with the basics of machine tools and basic machining operations. Chapter 3 deals with basic concepts of fluid mechanics and their applications. Chapter 4 deals with basic thermodynamics and its applications. Chapter 5 gives an elementary idea of heat engines and basic principles of their working.

Web Supplement:
The following additional information is available on the website at http://www.mhhe.com/nag/bme4/rgpv11
- Additional Solved Examples
- Viva-Voce Questions
- Solutions of Latest RGVP Question Paper
- Powerpoint Lecture Slide for Instructors.

The authors would like to express their gratitude to their colleagues, fellow teachers in other institutions, past students, and senior teachers for their support and motivation in taking up this task.

A note of acknowledgement is also due to the esteemed reviewers of this book.
Rahul Thakur  
Oriental Institute of Science and Technology, Bhopal
Mohammad Ali  
Sanghvi Institute of Science and Technology, Indore
Abhay Kakirde  
Truba College of Engineering and Technology, Indore

The authors hope that this text would serve the basic objective of delivering the knowledge, information and basic concepts related to the branch of mechanical engineering. It is hoped that the book would serve as an important stepping stone for students of the mechanical engineering branch. The authors sincerely look forward to comments and suggestions towards improvements in the book.

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