

Preface

Engineering Graphics is a core subject taught at the first-year level in all disciplines of engineering, both at the degree as well as the diploma level. It is also a pre-requisite to all engineering professionals since it acts as an ‘international language of engineers’. It is a viable method of communicating technical ideas in a recorded form. When exact visual understanding is necessary, engineering graphics is the accurate technique that can be used. It develops the ability to visualize any object with all the physical and dimensional configurations.

Making of the Book

This book is mainly intended to meet the requirements of the first year BE/B.Tech. students of all the technical universities and institutes and other basic courses of professional technical bodies. As it is essentially intended to be a classroom textbook, it contains a large number of worked examples covering every phase of the subject in a simple and understandable form. Examples have been classified from simple to typical ones and step-by-step procedures are given for solving most of the problems. The presentation of the subject matter and illustrations is simplified so as to enable the reader understand the basic concepts of the subject easily. It can also be used as a reference book for engineers working in the design office as well as on the shop floor.

This book has been written considering the newly revised syllabus of various universities, the new pattern of university examinations, previous exam question papers and will fulfill the requirement of engineering graphics for the future learning of drawing-oriented subjects like machine drawing, building drawing, etc. One of the first things that attract everyone’s attention is the excellent presentation in a clear, logical and concise manner. The work is an extract of the knowledge gained by the experience of successful classroom teaching of this subject with utmost devotion. Anyone who goes through the book cannot miss the enormous work that has gone into preparing the text in the present form.

This book is designed to be a comprehensive guide to cover the basic principles and also includes every significant feature of graphics software to make use of computers as drawing instruments. The miscellaneous problems on almost every topic will develop professional-level drawing skills. Although the basics are fully covered, many advanced features are also included. Therefore, the beginners should not feel concerned if some of the material seems too advanced. It will be useful in their professional career.

Drawings and Illustrations

The drawings have been prepared to the scale with the help of advanced software packages, maintaining the required recommendations of ISO and the latest BIS standards. Simple language, systematic introduction of concepts, variety of solved and exercise questions and easy-to-grasp formatting are some of the major features of the text. The salient features include the following:

- Emphasis on basic concepts
- Simplified presentation of the subject matter and illustrations
- Step-by-step procedures given for solved problems
- Use of latest BIS and ISO standards
- Classification of examples from simple to typical ones
- Large number of solved examples from university question papers
- An exclusive chapter on application of CAD software
- Review questions and objective-type questions on each chapter

This book is divided into eighteen chapters. The overall organization of the book goes from simple to complex, and each chapter has several step-by-step exercises.

Chapter Organisation

Chapter 1 provides the list of essential drawing equipment and instruments required in engineering graphics and their uses. Chapter 2 highlights the latest recommendations of The Bureau of Indian Standards in its bulletin 'SP 46: 2003 Engineering Drawing Practice for Schools and Colleges'. Chapter 3 reviews the elementary geometrical constructions. Chapter 4 describes the different types of engineering scales and their typical applications. Chapter 5 and chapter 6 deal with the construction of curves used in engineering practice.

Chapter 7 begins with the fundamentals of orthographic projections. Chapters 8 through 12 present the orthographic projections of points, straight lines, planes, solids and sections of solids. Chapter 13 describes the development of surfaces as applied to sheet metal work. Chapter 14 deals with the curves of intersection of interpenetrating solids. It is recommended that beginners read chapters 8 through 14 in the same chronological order as given in this book. Chapter 15 through Chapter 17 describe the principal methods of construction of pictorial views. Finally, Chapter 18 deals with the use of computer graphics with the help of the latest version of the popular graphics software AutoCAD 2007 developed by Autodesk Inc. An attempt is made to present some of its basic commands in a simple way. The readers are however advised to refer to the manuals prepared by Autodesk for its detailed features and applications.

Web Supplements

The Web Supplements for this book can be accessed at www.mhhe.com/agarwal/ed and they contain the following material:

For Students

- Additional practice problems(Solved and Unsolved)
- Tips for perfect drawing
- Extra reading material which throws light on the applications and also the importance of Engineering Drawing (with some real life pictures/photos)
- Chapter outlines for quick revision during exams

For Instructors

- Solution manual
- PPTs of figures
- Additional Problems with solutions (teachers can use these questions for giving assignments to the students.)

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*Department of Mechanical Engineering, NIT,
Calicut*

V Ananda Krishnan

*Department of Mechanical Engineering,
SAASTRA University, Thanjavur*

C J Naiju

*Department of Mechanical Engineering,
Vellore Institute of Technology, Vellore*

M Ramajayam

*Department of Mechanical Engineering,
Annamalai University, Chennai*

Sampath Kumar

*Department of Mechanical Engineering,
Mepco Schlenk College of Engineering, Sivakasi*

Vasudeva P

*Department of Mechanical Engineering,
Siddhaganga College of Engineering,
Tumkur*

S B Sharma

*Department of Production Engineering,
Guru Govind Institute of Engineering and
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G K Dash

*Department of Mechanical Engineering,
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Jasminder Singh Grewal

Department of Mechanical Engineering

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BASANT AGRAWAL
C M AGRAWAL