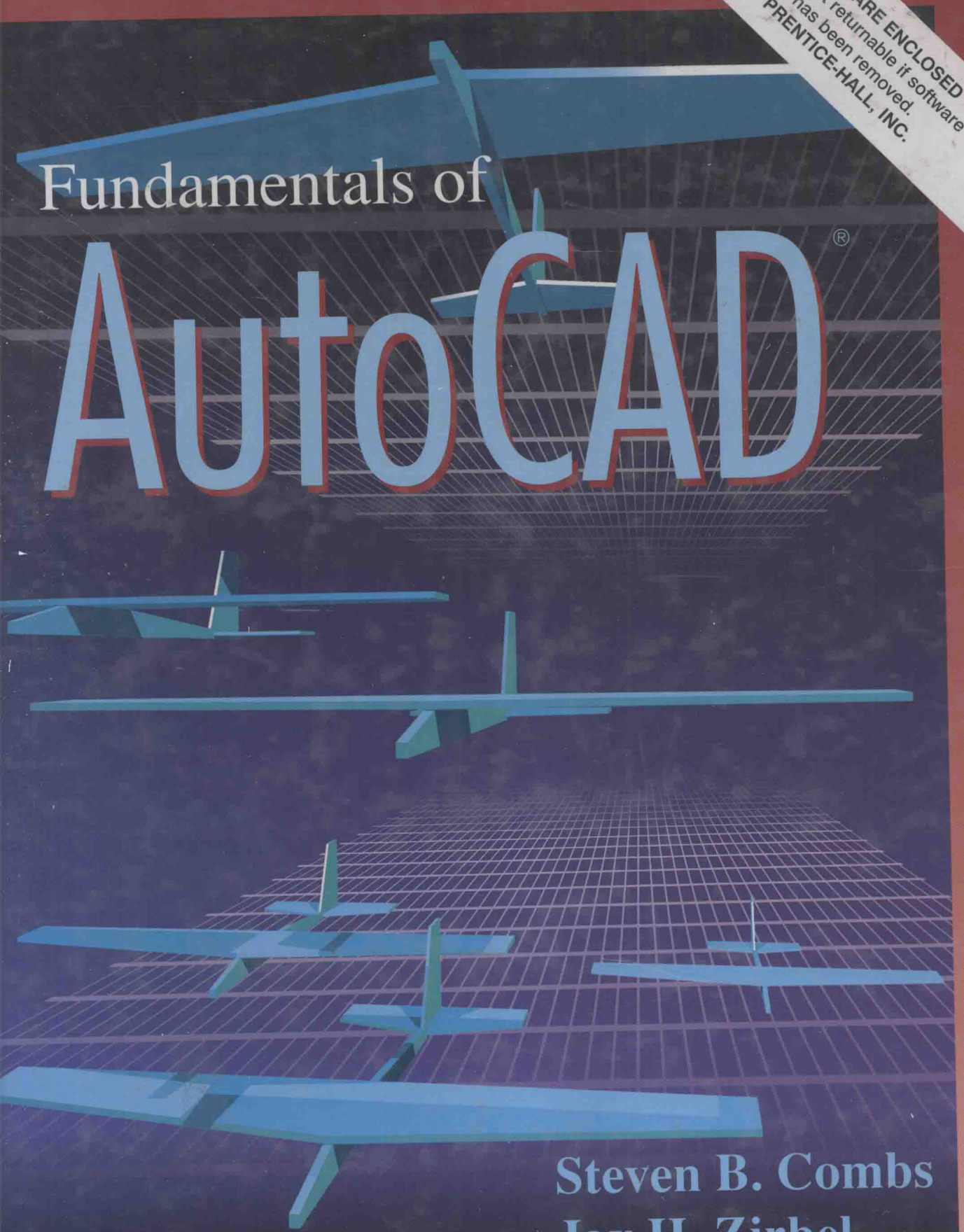
Fundamentals of AutoCAD®



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FUNDAMENTALS OF AUTOCAD®

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PREFACE

AutoCAD® is probably one of the more intimidating software packages taught in education. With its stiff computer hardware requirements and numerous commands, it can be a daunting task for both the instructor to teach and the student to learn. This book focuses on using AutoCAD as a drafting tool. Wherever possible, examples and exercises are used to provide real-world problems in an effort to make this book practical as well as functional. Included are Auto CAD's most popular 2-D drawing commands that should be covered with one-half of an academic year for high schools or one college semester.

UNIQUE FEATURES

While there are many good AutoCAD books on the market, *Fundamentals of AutoCAD* has several unique and important features, including the following:

- **Updated for AutoCAD Release 13c4 for Windows® 95/NT 4.0.** Many AutoCAD texts are based on the initial version of AutoCAD Release 13 and do not include the new commands and features released in version 13c4. Version 13c4 included several new commands and dialog boxes, which are all thoroughly covered in this text. One of the most significant features of this upgrade was support for Windows 95 and Windows NT 4.0. While the hardware and cost requirements for Windows NT 4.0 are out of reach for most educational institutions, Windows 95 offers an inexpensive alternative. The interface is similar in both operating systems, however, and gives students trained with Windows 95 the versatility to work with the Windows NT version of AutoCAD as well.
- **Unit Exercises.** Each unit contains 10 short-answer questions as well as one applied exercise that is intended to develop students' AutoCAD skills. The exercises are generic in nature and are not for any one discipline. These are not meant to be the only assignments given to students; the instructor should include additional assignments of his or her own development or consider using one of the optional workbooks that are available as supplements to this text.
- **Optional Workbooks.** Workbooks are available for specific educational disciplines: Mechanical Drafting Workbook (ISBN 013-887738-6), Architectural Drafting Workbook (ISBN 0-13-758574-8), and Electronics Drafting Workbook (ISBN 013-758566-7) are currently available. These workbooks describe the use of commands in a manner specific to a particular discipline. Discipline-specific examples and exercises are also included, giving the students more real-world experience.
- **Work Disk.** By using the work disk, students can work with commands and features immediately without having to create complex geometry. See the disk for instructions on its use.
- **Web Page.** One of the most exciting new features is a Web page for this text. On this interactive Web page, students can provide feedback to the authors, participate with other students in electronic discussion groups, test their retention with online quizzes, and link to other Web pages that contain information and news about the world of AutoCAD. Instructors can also provide feedback to the authors, participate with other instructors in discussions about curriculum, give online quizzes and have the results electronically mailed back to the instructor, and link to other Web pages that contain the latest information and news about AutoCAD and AutoCAD in education.

Organization of the Text

The text is divided into 16 units to correspond with the 16 weeks in a typical semester. Each unit is divided into sections, grouping similar commands and exercises together. Units 1 through 4 present the basic skills necessary to begin using AutoCAD. Many of the skills in these sections form the foundation for other commands, so it is imperative that students understand these units thoroughly. Units 5 through 8 expand on various drawing commands and techniques, allowing students to create complex geometry. These units ensure students can create any shape they can imagine. Units 9 through 11 introduce the various ways to select and edit existing objects. A large amount of editing is usually required throughout the course of a drawing. Editing commands not only modify existing objects, but they also create new objects. Unit 12 includes advanced drawing commands that assist in the creation of complex shapes and objects. Unit 13 presents what is traditionally thought of as the most difficult concept for new students—dimensioning an object. Unit 14 allows students to extract information from their drawings for further analysis. Unit 15 discusses how to automate the placement and creation of repetitive shapes. Finally, Unit 16 introduces the concept of isometric drawings and their creation.

Unit Layout

To assist in the learning of AutoCAD, each unit consists of the following sections:

- **Overview.** Briefly describes the material to be presented in the unit.
- **Objectives.** Different from the outline, this section presents specific skills that students should have upon completion of the unit.
- **Outline.** Outlines the entire unit and lists the commands to be presented.
- **Illustrations.** Each unit contains numerous illustrations to help in describing a specific function or command. AutoCAD is a very graphic package, and the addition of well-defined illustrations helps in clarifying difficult concepts.
- **Tutorials.** Tutorials provide the procedures necessary to utilize a command or feature. Tutorials are located in boxes and are easy to find. The segregation of these tutorials makes them easy to identify. A tutorial will walk students through a particular command or concept so they can see first-hand how a command or series of commands is used.

- **Skill Builders.** Skill Builders provide tips and shortcuts that allow for easier or faster AutoCAD operation. They are techniques commonly used by professionals.
- **For the Professional.** For the Professional introduces advanced concepts that increase students' understanding of an AutoCAD command or feature. AutoCAD was developed for the creation of engineering graphics. Many of the commands and features are based on tools or skills from manual drafting. A For the Professional is used to provide additional information that may help students' avoid problems, or offers advice that relate to the topic. This will increase students' awareness of how and why a command is used in a specific situation.
- **Summary.** The summary is a wrap-up of the unit used to reinforce retention and to promote additional thought and discussion.
- **Review.** The review consists of 10 short-answer questions that test students' retention of commands and procedures. They can be used as homework or to spark a discussion after the lecture.
- **Exercises.** These short drawing assignments are meant to incorporate many of the commands and features presented within the unit. Each assignment comes complete with a step-by-step procedure for getting started. As students progress through the units, the step-by-step procedures are decreased, and students are asked to draw from their knowledge in completing the assignments.

To the Student

Many excellent jobs are available for people with a good understanding of AutoCAD. While the textbook contains complete explanations of all the commands, nothing can take the place of practice. To become proficient in AutoCAD, you must continually work with

the program and refine your skills. AutoCAD is a complicated software package. Many have likened AutoCAD to learning a foreign language. In order to understand its commands and nuances, you must practice it daily.

The Review exercises are designed to make you think. After class, try to answer each one without looking back at your notes or the book. Then, verify your answer with the text. Most of the Review items are quite simple, especially if you have done the reading and listened to the lecture.

Complete the Unit Tutorials. The tutorials present a step-by-step method for utilizing a command or feature. Often a tutorial will highlight different methods of using a command. Completing the tutorials will give you a more rounded view of AutoCAD in addition to valuable practice. If you have questions, ask your instructor for additional help.

HAVE FUN! AutoCAD is fun. You will receive great satisfaction when you figure out how to use a command or how to create a complex object or shape. Follow these steps and we are sure that your experience with AutoCAD will be a pleasurable and rewarding one.

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I dedicate this book to my daughter Katherine. Although you are too young to read this now, thanks for being the best daughter a father could have, "pea pie."

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CONTENTS