

**AUTOCAD® 2005 AND  
AUTOCAD LT® 2005:  
NO EXPERIENCE  
REQUIRED®**

*David Frey*

**SYBEX®**

**AUTOCAD 2005 AND  
AUTOCAD LT 2005**  
***NO EXPERIENCE REQUIRED***

*This page intentionally left blank*

# **AUTOCAD<sup>®</sup> 2005 AND AUTOCAD LT<sup>®</sup> 2005**

***NO EXPERIENCE REQUIRED<sup>®</sup>***

David Frey



San Francisco • London

Associate Publisher: Dan Brodnitz  
Acquisitions Editor: Willem Knibbe  
Developmental Editor: Mariann Barsolo  
Production Editor: Mae Lum  
Technical Editor: Sam Sol Matzkin  
Copyeditor: Pat Coleman  
Compositor: Franz Baumhackl  
Proofreaders: Laurie O'Connell, Nancy Riddiough  
Indexer: Ted Laux  
Book Designer: Franz Baumhackl  
Cover Designer: Design Site  
Cover Illustrator: Jack D. Myers

Copyright © 2004 SYBEX Inc., 1151 Marina Village Parkway, Alameda, CA 94501. World rights reserved. No part of this publication may be stored in a retrieval system, transmitted, or reproduced in any way, including but not limited to photocopy, photograph, magnetic, or other record, without the prior agreement and written permission of the publisher.

An earlier version of this book was published under the title *AutoCAD 2004 and AutoCAD LT 2004: No Experience Required* © 2003 SYBEX Inc.

Library of Congress Card Number: 2004104123  
ISBN: 0-7821-4341-5

SYBEX and the SYBEX logo are either registered trademarks or trademarks of SYBEX Inc. in the United States and/or other countries.

No Experience Required is a trademark of SYBEX Inc.

Screen reproductions produced with FullShot 99. FullShot 99 © 1991-1999 Inbit Incorporated. All rights reserved. FullShot is a trademark of Inbit Incorporated.

TRADEMARKS: SYBEX has attempted throughout this book to distinguish proprietary trademarks from descriptive terms by following the capitalization style used by the manufacturer.

The author and publisher have made their best efforts to prepare this book, and the content is based upon final release software whenever possible. Portions of the manuscript may be based upon pre-release versions supplied by software manufacturer(s). The author and the publisher make no representation or warranties of any kind with regard to the completeness or accuracy of the contents herein and accept no liability of any kind including but not limited to performance, merchantability, fitness for any particular purpose, or any losses or damages of any kind caused or alleged to be caused directly or indirectly from this book.

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

*To Irv and Ruth, Shirley and Sol,  
Phyllis and Jonas, and to Dick and Sylvia,  
for their enthusiasm and support  
for my writing this book.*

# ACKNOWLEDGMENTS

**M**any people deserve acknowledgment and gratitude for their contribution to the development and publication of this book. Many thanks to the folks at Sybex who were involved in this project. Monica Baum of the contracts and licensing team helped me finalize the contract. Thanks also to Willem Knibbe, acquisitions editor, for his efforts to gain support for the publication of this book and for his help in getting me started. Mariann Barsolo served well as developmental editor through most of the project and gave excellent answers to my numerous questions. I appreciate the efforts of Pat Coleman, who, returning in her role as copyeditor, continued to be diligent at improving the readability of the book. Mae Lum served (for the third time!) as production editor and has again done wonders to coordinate everything, keep me well informed, and make sure the book got done on time. Also, thanks to Sam Sol Matzkin, who served as the technical editor; his generosity in lending his experience as a civil engineer and as an AutoCAD trainer to this project is greatly appreciated.

I also want to mention the production team at Sybex: compositor Franz Baumhackl; proofreaders Laurie O'Connell and Nancy Riddiough; and indexer Ted Laux. They've been successful in maintaining the standards of high quality that Sybex is known for, and I appreciate their work on this book.

# CONTENTS AT A GLANCE

	<i>Introduction</i>	<i>xv</i>
<b>CHAPTER 1</b>	Getting to Know AutoCAD	1
<b>CHAPTER 2</b>	Basic Commands to Get Started	23
<b>CHAPTER 3</b>	Setting Up a Drawing	51
<b>CHAPTER 4</b>	Gaining Drawing Strategies: Part 1	73
<b>CHAPTER 5</b>	Gaining Drawing Strategies: Part 2	125
<b>CHAPTER 6</b>	Using Layers to Organize Your Drawing	169
<b>CHAPTER 7</b>	Grouping Objects into Blocks	215
<b>CHAPTER 8</b>	Generating Elevations	275
<b>CHAPTER 9</b>	Working with Hatches and Fills	311
<b>CHAPTER 10</b>	Controlling Text in a Drawing	347
<b>CHAPTER 11</b>	Dimensioning a Drawing	405
<b>CHAPTER 12</b>	Managing External References	457
<b>CHAPTER 13</b>	Using Layouts to Set Up a Print	493
<b>CHAPTER 14</b>	Printing an AutoCAD Drawing	545
<b>APPENDIX</b>	A Look at Drawing in 3D	581
<b>GLOSSARY</b>		627
	<i>Index</i>	<i>640</i>



# CONTENTS

	<i>Introduction</i>	<i>xv</i>
<b>CHAPTER 1</b>	<b>Getting to Know AutoCAD</b>	<b>1</b>
	Starting Up AutoCAD	2
	The Startup Dialog Box	2
	Introduction to the AutoCAD Graphics Window	5
	The Command Window	10
	Drop-Down Menus	11
	The Toolbars	12
	Toolbar Flyouts	12
	Displaying and Arranging Toolbars	14
	Custom Toolbars	18
	Profiles	19
	The Keyboard	20
	The Mouse	21
	Are You Experienced?	22
<b>CHAPTER 2</b>	<b>Basic Commands to Get Started</b>	<b>23</b>
	The Line Command	24
	Using Coordinates	28
	Relative Coordinates	30
	Drawing the Box	32
	Using Relative Cartesian Coordinates	32
	Erasing Lines	34
	Using Relative Polar Coordinates	34
	The Offset Command	35
	The Fillet Command	38
	Completing the Box	41
	Offsetting Lines to Mark an Opening	41
	Extending Lines	42
	Trimming Lines	44
	If You Would Like More Practice...	49
	Are You Experienced?	50

---

<b>CHAPTER 3</b>	<b>Setting Up a Drawing</b>	<b>51</b>
	Drawing Units	52
	Drawing Size	56
	The Grid	56
	Drawing Limits	59
	Drawing with Grid and Snap	62
	Saving Your Work	66
	A Summary of AutoCAD's Units	69
	Linear Units	69
	Angular Units	69
	If You Would Like More Practice...	70
	Are You Experienced?	71
<b>CHAPTER 4</b>	<b>Gaining Drawing Strategies: Part 1</b>	<b>73</b>
	Laying Out the Walls	74
	The Exterior Wall Lines	75
	The Interior Walls	79
	Cutting Openings in the Walls	88
	Creating Doors	96
	Drawing Swinging Doors	96
	Copying Objects	104
	Mirroring Objects	106
	Finishing the Swinging Doors	108
	Drawing a Sliding Glass Door	110
	If You Would Like More Practice...	120
	An Alternate Sliding Glass Door	120
	An Addition to the Cabin	120
	Draw Three Views of a Block	122
	Are You Experienced?	124
<b>CHAPTER 5</b>	<b>Gaining Drawing Strategies: Part 2</b>	<b>125</b>
	Drawing the Steps and Thresholds	128
	The Front Step	128
	The Back Step	132
	The Thresholds	136
	The Balcony: Drawing Circles	138
	Laying Out the Kitchen	142
	The Counter	143
	The Stove and Refrigerator	146

	Completing the Stove	147
	The Kitchen Sink	152
	Constructing the Bathroom	154
	Setting Running Object Snaps	154
	Drawing a Shower Unit	156
	The Bathroom Sink	158
	Positioning a Toilet	159
	If You Would Like More Practice...	164
	Draw the Cabin Again	164
	Draw Something Else	164
	Draw Some Furniture for the Cabin	164
	Draw a Gasket	165
	Draw a Parking Lot	167
	Are You Experienced?	168
<b>CHAPTER 6</b>	<b>Using Layers to Organize Your Drawing</b>	<b>169</b>
	Layers as an Organization Tool	170
	Setting Up Layers	172
	The Layer Properties Manager Dialog Box	173
	Assigning Objects to Layers	185
	Turning Off and Freezing Layers	195
	Drawing the Headers	197
	Drawing the Roof	201
	Assigning an Individual Linetype Scale Factor	205
	Properties of Layers and Objects	211
	If You Would Like More Practice...	212
	Experiment with Linetypes and Linetype Scales	213
	Set Up Layers for Your Own Trade or Profession	214
	Are You Experienced?	214
<b>CHAPTER 7</b>	<b>Grouping Objects into Blocks</b>	<b>215</b>
	Making a Block for a Door	217
	Inserting the Door Block	220
	Finding Blocks in a Drawing	229
	Using Grips to Detect a Block	229
	Using the List Command to Detect a Block	229
	Using the Properties Palette to Detect a Block	232
	Creating a Window Block	233
	Inserting the Window Block	236
	Rotating a Block During Insertion	237

---

Using Guidelines When Inserting a Block	240
Using Object Snap Tracking and Polar Tracking to Insert a Block	242
Finishing the Windows	248
Revising a Block	251
Sharing Information between Drawings	255
Dragging and Dropping between Two Open Drawings	255
Using AutoCAD's DesignCenter	259
Other Ways to Share Information between Drawings	265
If You Would Like More Practice...	272
Are You Experienced?	273
<b>CHAPTER 8</b>	
<b>Generating Elevations</b>	<b>275</b>
Drawing the Front Elevation	276
Setting Up Lines for the Heights	278
Using Grips to Copy Lines	280
Trimming Lines in the Elevation	283
Drawing the Roof in Elevation	285
Putting in the Door, the Step, and the Windows	289
Finishing Touches	295
Generating the Other Elevations	296
Making the Rear Elevation	296
Revising the Rear Elevation	299
Making the Left and Right Elevations	301
Drawing Scale Considerations	307
Interior Elevations	308
If You Would Like More Practice...	309
Are You Experienced?	310
<b>CHAPTER 9</b>	
<b>Working with Hatches and Fills</b>	<b>311</b>
Hatching the Front Elevation	312
Looking at Hatch Patterns	316
Hatching the Rest of the Front Elevation	318
Special Effects	321
Modifying a Hatch Pattern	327
Using Hatches in the Floor Plan	329
Hatching the Floors	329
Finishing the Hatches for the Floors	333
Hatching the Walls in the Floor Plan	334
Modifying the Shape of Hatch Patterns	336

Creating and Managing Tool Palettes	337
Creating a New Tool Palette	338
Setting Up a Palette for Hatches	339
Creating a Palette for Commands	341
If You Would Like More Practice...	343
Create a Hatch Pattern for the Roof in Plan View	343
Create Your Hatch Palette	345
Are You Experienced?	346
<b>CHAPTER 10 Controlling Text in a Drawing</b>	<b>347</b>
Setting Up Text Styles	348
Text and Drawing Scale	349
Defining a Text Style for Room Labels	350
Using Single-Line Text	352
Placing Titles of Views in the Drawing	352
Placing Room Labels in the Floor Plan	355
Using Text in a Grid	361
Creating a Title Block and Border	370
Using Multiline Text	385
Other Aspects of Multiline Text	392
Creating a Table	396
Defining a Table Style	396
Designing a Table	399
If You Would Like More Practice...	403
Are You Experienced?	404
<b>CHAPTER 11 Dimensioning a Drawing</b>	<b>405</b>
Dimension Styles	406
Making a New Dimension Style	406
Placing Dimensions on the Drawing	421
Horizontal Dimensions	422
Vertical Dimensions	428
Other Types of Dimensions	431
Radial Dimensions	431
Leader Lines	435
Angular and Aligned Dimensions	437
Modifying Dimensions	441
Modifying Dimension Text	442
Dimension Overrides	447
Dimensioning Short Distances	449

If You Would Like More Practice...	453
Exercise 1: Dimensioning the Garage Addition	453
Exercise 2: Dimensioning to a Center Line	454
Other Exercises	456
Are You Experienced?	456
<b>CHAPTER 12 Managing External References</b>	<b>457</b>
Drawing a Site Plan	459
Using Surveyor Units	459
Drawing the Driveway	462
Setting Up an External Reference	466
The External Reference Dialog Box	466
Controlling the Appearance of an Xref	468
Moving and Rotating an Xref	474
Modifying an Xref Drawing	476
Modifying an Xref by Making It the Current Drawing	477
Modifying an Xref from within the Host Drawing	481
Applications for Xrefs	485
Additional Xref Features	486
The Xref Path	486
Binding Xrefs	488
Other Features of Xrefs	490
If You Would Like More Practice...	491
Are You Experienced?	492
<b>CHAPTER 13 Using Layouts to Set Up a Print</b>	<b>493</b>
Setting Up Layouts	494
Drawing a Border on a Layout	501
Designing a Title Block for a Layout	503
Adjusting a Viewport	507
Switching between Model Space and a Layout	509
Working with Multiple Viewports in a Layout	511
Setting Up Multiple Viewports	512
Aligning Viewports	517
Finishing the 11" × 17" Drawing	519
Setting Up Viewports in Different Scales	522
Adding Multiple Viewports to a Layout	528
Adding Text to Paper Space	537
Turning Off Viewports	540
If You Would Like More Practice...	542
Are You Experienced?	544

<b>CHAPTER 14</b>	<b>Printing an AutoCAD Drawing</b>	<b>545</b>
	The Plot Dialog Box	547
	Printer/Plotter	548
	Paper Size and Number of Copies	549
	The Plot Area	549
	Plot Scale	554
	Plot Offset and Plot Options	555
	The Expanded Plot Dialog Box	556
	Printing a Drawing	557
	Determining Lineweights for a Drawing	558
	Other Properties of Layers	561
	Setting Up the Other Parameters for the Print	562
	Previewing a Print	562
	Printing a Drawing Using Layouts	565
	Printing a Drawing with Multiple Viewports	566
	Printing the Site Plan	569
	A Few Words About Plot Styles	571
	Plot Style Table Files	572
	Are You Experienced?	580
<b>APPENDIX</b>	<b>A Look at Drawing in 3D</b>	<b>581</b>
	3D Modeling	583
	Viewing a Drawing in 3D	583
	Making the Walls	585
	Cutting Doorway Openings	589
	Subtracting Window Openings	591
	Creating a Floor for the Cabin	595
	Forming the Steps and the Balcony in 3D	598
	Finishing the 3D Model	603
	Putting a Roof on the Cabin	607
	Further Directions in 3D	609
	Other Solids Modeling Tools	610
	Surface Modeling Tools	611
	Rendering with AutoCAD	613
<b>GLOSSARY</b>		<b>627</b>
	<i>Index</i>	640

# INTRODUCTION

**T**his book was born of the need for a simple yet engaging tutorial that would help beginners step into the world of AutoCAD or AutoCAD LT without feeling intimidated. That tutorial has evolved over the years into a full introduction to the way in which architects and civil and structural engineers use AutoCAD to increase their efficiency and ability to produce state-of-the-art computerized production drawings and designs.

Because AutoCAD and AutoCAD LT are so similar, it makes sense to cover the basics of both programs. For most of the book, the word *AutoCAD* stands for both AutoCAD and AutoCAD LT.



When you come to a section of a chapter that applies to AutoCAD only, an icon (shown here) is displayed in the margin to alert you. Then, at the end of that section, extra information for AutoCAD LT users is provided to give you a workaround or otherwise keep you in step with the tutorial.

The appendix, which is an introduction to drawing in 3D, applies only to AutoCAD, because AutoCAD LT does not have the 3D commands and features. LT users, be assured: other than the 3D features, LT is much the same program as AutoCAD, with minor differences. You'll be prompted when those differences come along.

This book is directed toward AutoCAD and AutoCAD LT novices—users who know how to use a computer and do basic file-managing tasks, such as creating new folders and saving and moving files, but who know nothing or little about AutoCAD or LT, as we'll be calling AutoCAD LT throughout the book. If you are new to the construction and design professions, this book will be an excellent companion as you're learning AutoCAD. If you're already practicing in those fields, you'll immediately be able to apply the skills you'll pick up from this book to real-world projects. The exercises have been successfully used to train architects, engineers, and contractors, as well as college and high-school students, in the basics of AutoCAD.

For those of you in other trades and professions, the project that runs through the book—drawing a small cabin—has been kept simple so that it does not require any special training in architecture or construction. Also, most chapters have additional information and exercises specifically designed for non-AEC users. So anyone wanting to learn AutoCAD will find this book helpful.

◀  
**A note like this will provide you with information on AutoCAD LT, as well as other helpful information.**



## What Will You Learn from This Book?

Learning AutoCAD, like learning any complex computer program, requires a significant commitment of time and attention and, to some extent, a tolerance for repetition. You must understand new concepts to operate the program and to appreciate its potential as a drafting and design tool. But to become proficient at AutoCAD, you must also use the commands enough times to gain an intuitive sense of how they work and how parts of a drawing are constructed.

At the end of most chapters, you will find one or more additional exercises and a checklist of the tools you have learned (or should have learned!). The steps in the tutorial have a degree of repetition built into them that allows you to work through new commands several times and build up confidence before you move on to the next chapter.

Progressing through the book, the chapters fall into four general areas of study:

- ▶ Chapters 1 through 3 familiarize you with the organization of the screen, go over a few of the most basic commands, and equip you with the tools necessary to set up a new drawing.
- ▶ Chapters 4 and 5 develop drawing strategies that will help you use commands efficiently.
- ▶ Chapters 6 through 11 work with AutoCAD's major features.
- ▶ Chapters 12 through 14 and the Appendix examine intermediate and advanced AutoCAD features.

In the process of exploring these elements, you will follow the steps involved in laying out the floor plan of a small, three-room cabin. You will then learn how to generate elevations from the floor plan and, eventually, how to set up a title block and print your drawing. Along the way, you will also learn how to do the following:

- ▶ Use the basic drawing and modify commands in a strategic manner
- ▶ Set up layers
- ▶ Put color into your drawing
- ▶ Define and insert blocks
- ▶ Generate elevation views
- ▶ Place hatch patterns and fills on building components
- ▶ Use text in your drawing
- ▶ Dimension the floor plan

Chapters in the last part of the book touch on more advanced features of AutoCAD, including:

- ▶ Drawing a site plan
- ▶ Using external references
- ▶ Setting up a drawing for printing with layouts
- ▶ Making a print of your drawing
- ▶ Working in three dimensions, for AutoCAD users

All these features are taught using the cabin as a continuing project. As a result, you will build up a set of drawings that document your progress through the project and that you can use later as reference material if you find that you need to refresh yourself with material in a specific skill.

At the end of the book is a glossary of terms that are used in the book and are related to AutoCAD and building design, followed by an index.

## Files on the Website

If you are already somewhat familiar with AutoCAD and reading only some of the chapters, you can pull accompanying files for this book from Sybex's website at [www.sybex.com](http://www.sybex.com). Use the Catalog or Search tool to find this book's web page, and then click the Downloads button.

Also on Sybex's website, in addition to the .dwg files that accompany the book, you can download a bonus chapter, "Making the Internet Work with AutoCAD" and a bonus appendix, "An Introduction to Attributes." These introduce you to tools for working online with AutoCAD and demonstrate a method for defining attributes and constructing a title block using attributes, respectively.

## Hints for Success

Because this book is essentially a step-by-step tutorial, it has a side effect in common with any tutorial of this type. After you finish a chapter and see that you have progressed further through the cabin project, you may have no idea how you got there and are sure you couldn't do it again without the help of the step-by-step instructions.

This feeling is a natural result of this kind of learning tool, and you can do a couple of things to get past it. You can do the chapter over again. This may seem tedious, but it has a great advantage. You gain speed in drawing. You'll accomplish the same task in half the time it took you the first time. If you repeat a chapter a third time, you'll halve your time again. Each time you repeat a chapter, you can skip more and more of

the explicit instructions, and eventually you'll be able to execute the commands and finish the chapter by just looking at the figures and glancing at the text. In many ways this is just like learning a musical instrument. You must go slow at first, but over time and through practice, your pace picks up.

Another suggestion for honing your skills is to follow the course of the book, but apply the steps to a different project. You might draw your own living space or design a new one. If you have a real-life design project that isn't too complex, that's even better. Your chances for success in learning AutoCAD or any computer program are greatly increased when you are highly motivated, and a real project of an appropriate size can be the perfect motivator.

## **Ready, Set...**

When I started learning AutoCAD about 17 years ago, I was at first surprised how long I could sit at a workstation and be unaware of time passing. Then, shortly afterward, I experienced a level of frustration that I never thought I was capable of feeling. When I finally “got over the hump” and began feeling that I could successfully draw with this program after all, I told myself that I would someday figure out a way to help others get over the hump. That was the primary motivating force for writing this book. I hope it works for you and that you too get some enjoyment while learning AutoCAD. As the title says, there is “No experience required,” only an interest in the subject and a willingness to learn!

# CHAPTER 1



## Getting to Know AutoCAD

- ▶ Opening a new drawing
- ▶ Getting familiar with the AutoCAD and AutoCAD LT Graphics windows
- ▶ Modifying the display
- ▶ Displaying and arranging toolbars

**Y**our introduction to AutoCAD and AutoCAD LT begins with a tour of the features of the screens used by the two programs. In this chapter, you will also learn how to use some tools that help you control the screen's appearance and how to find and start commands. For the material covered in this chapter, the two applications are almost identical in appearance. Therefore, as we tour AutoCAD, I'll point out any differences between AutoCAD and AutoCAD LT. In general, LT is a 2D program, so it doesn't have the 3D features that come with AutoCAD, such as solids modeling and rendering. The other differences are minor. As mentioned in this book's Introduction, when I say "AutoCAD," I mean both AutoCAD and AutoCAD LT. I'll also refer to AutoCAD LT as "LT" throughout this chapter and the rest of the book. Starting up AutoCAD is the first task at hand.

## Starting Up AutoCAD

If you installed AutoCAD or LT using the default settings for the location of the program files, start AutoCAD by choosing Start > All Programs > Autodesk > AutoCAD 2005 > AutoCAD 2005. For LT, choose Start > All Programs > Autodesk > AutoCAD LT 2005 > AutoCAD LT 2005. If you customized your installation, find and click the AutoCAD 2005 or the AutoCAD LT 2005 icon to start the program.

## The Startup Dialog Box

If AutoCAD or LT opens with the Startup dialog box sitting in front of the AutoCAD Graphics window, your screen will look like Figure 1.1. If the Startup dialog box doesn't open, read on a little—you'll see how to display it and then how to suppress it.

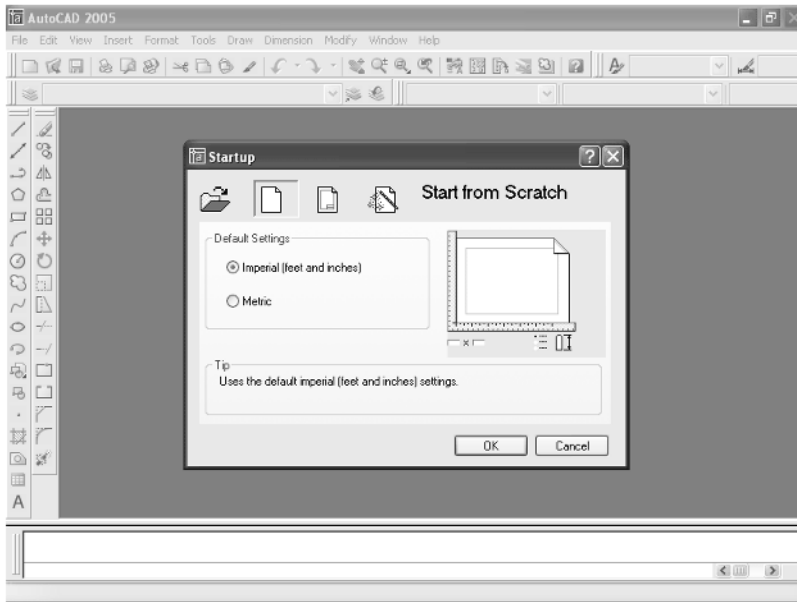
The Startup dialog box has four buttons in the upper-left corner. The first two buttons let you set up a new drawing and choose an existing drawing to revise or update. The second two buttons use templates and wizards to initiate advanced setup routines. The contents of the middle portion of the dialog box depend on which of the four buttons you choose. By beginning a new drawing, you can get past this dialog box to the AutoCAD Graphics window.



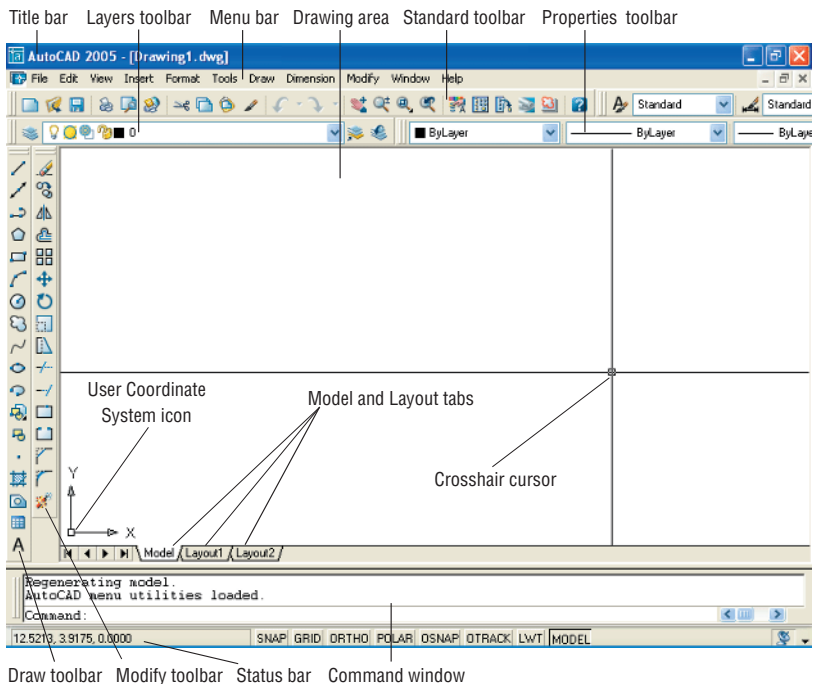
1. Click the Start From Scratch button, the second button from the left.
2. In the Default Settings section, click the Imperial (Feet And Inches) radio button.
3. Click OK to close the Startup dialog box. Your monitor displays the AutoCAD or LT Graphics window, sometimes called the Graphical User Interface, or GUI (see Figure 1.2).

**Dialog boxes with various combinations of buttons and text boxes are used extensively in AutoCAD and LT. You will learn their many functions as you progress through the book.**

**Radio buttons are round and come in a list or a group. You can activate only one radio button at a time.**



**FIGURE 1.1:** The Startup dialog box



**FIGURE 1.2:** The AutoCAD Graphics window



**NOTE** If the **New Features Workshop** window appears when you start up AutoCAD, click the second or third radio button in the window, and then click **OK** to remove it. You can always access it on the **Help** menu.

The toolbars on your screen may not be in exactly the same places as they are shown in Figure 1.2. I recommend that you set your screen to look like the one here, as it will make following through the book that much easier. Later in this chapter, you will see how to move the toolbars, display new ones and place them, and delete them.

Another feature called *palettes* might be visible on the far-right side of your screen when you start AutoCAD. Palettes can display as a rectangular area or as a vertical title bar. If they appear, choose **Tools > Tool Palettes Window** to temporarily close the palettes. We'll take a look at them in Chapters 7 and 9.

---

## CONTROLLING THE WAY AUTOCAD STARTS UP

You can set AutoCAD and LT to display or hide the Startup dialog box when you start AutoCAD.

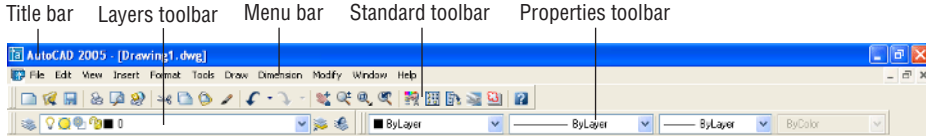
1. From the menu bar, choose **Tools > Options** to open the Options dialog box.
2. Click the **System** tab to bring it forward.
3. In the **General Options** section, open the **Startup** drop-down list.
  - ▶ If you want AutoCAD to display the Startup dialog box, click **Show Startup Dialog Box**.
  - ▶ If you want AutoCAD to start up with a blank drawing, click **Do Not Show A Startup Dialog**.
4. Click **Apply**, and then click **OK**.

The next time you start up AutoCAD, your preference will be used.

---

# Introduction to the AutoCAD Graphics Window

At the top of the Graphics window sit the title bar, the menu bar, and three toolbars.



The title bar is analogous to the title bar in any Windows program. It contains the program name (AutoCAD or AutoCAD LT) and the title of the current drawing with its *path*. Below the title bar is the menu bar, where you will see the drop-down menus. Among the drop-down menus, the first two on the left and the last one on the right are Windows menus (meaning that they appear on most Windows applications). These Windows menus also contain a few commands specific to AutoCAD. The rest of the menus are AutoCAD menus.

Below these menus is the *Standard toolbar*, which contains 22 command buttons (LT has only 21). Several of these buttons will be familiar to Windows users; the rest are AutoCAD commands. Just below the Standard toolbar are the *Layers toolbar* and the *Properties toolbar*, which together contain three command buttons and five drop-down lists.

The blank middle section of the screen is called the *drawing area*. Notice the movable *crosshair cursor*. The crosshairs on your cursor may not extend completely across the screen. I recommend that you set them to look like they do in the figures in this book, and I will show you how to do this when we make a few changes later in this chapter.

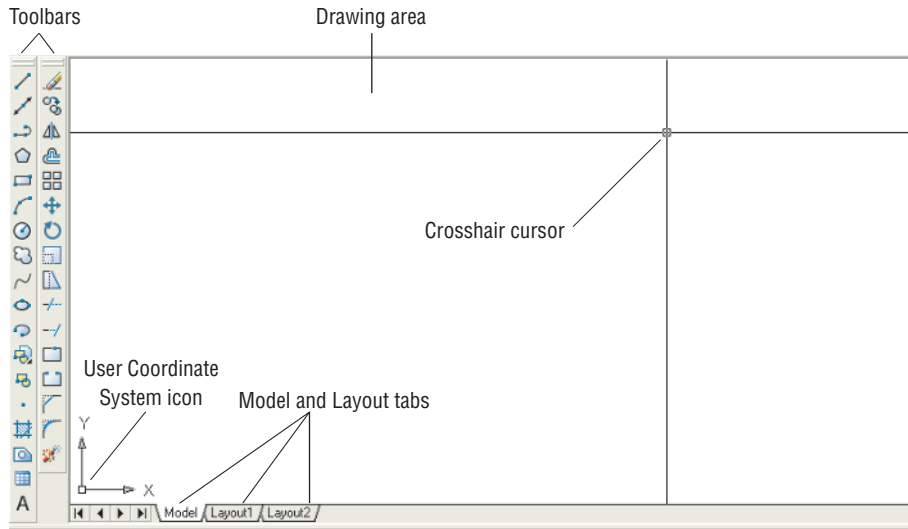
Notice the little box at the intersection of the two crosshair lines. This is one of several forms of the AutoCAD and LT cursor. When you move the cursor off the drawing area, it changes to the standard Windows pointing arrow. As you begin using commands, it will take on other forms, depending on which step of a command you are in.

The icon with a double arrow in the lower-left corner of the drawing area is the *User Coordinate System icon*. It indicates the positive direction for the X and Y coordinates. You won't need it for most of the chapters in this book, so you'll learn how to make it invisible in Chapter 3.

◀

**The title bar and menu bar at the top of the LT screen are identical to those of AutoCAD except that AutoCAD LT appears in the title bar rather than AutoCAD.**





At the bottom of the drawing area are three tabs: a Model tab and two Layout tabs. You use these tabs to switch between viewing modes. (I'll discuss viewing modes in Chapter 13.) Our example shows no toolbars floating in the drawing area, but there are two docked toolbars at the left of the drawing area. Your screen may or may not have the toolbars, or they may be in a different position. If the toolbars are within the drawing area, they will have a colored title bar. For specifics, see the section "The Toolbars" later in this chapter.

Below the drawing area is the *Command window*.



**The Command window in LT is identical to the one in AutoCAD.**

The Command window is where you tell the program what to do and where the program tells you what's going on. It's an important area, and you will need to learn how it works in detail. Three lines of text should be visible. If your screen displays fewer than three lines, you will need to make another line or two visible. You'll learn how to do this later in this chapter in the section "The Command Window."

Below the Command window is the *status bar*.

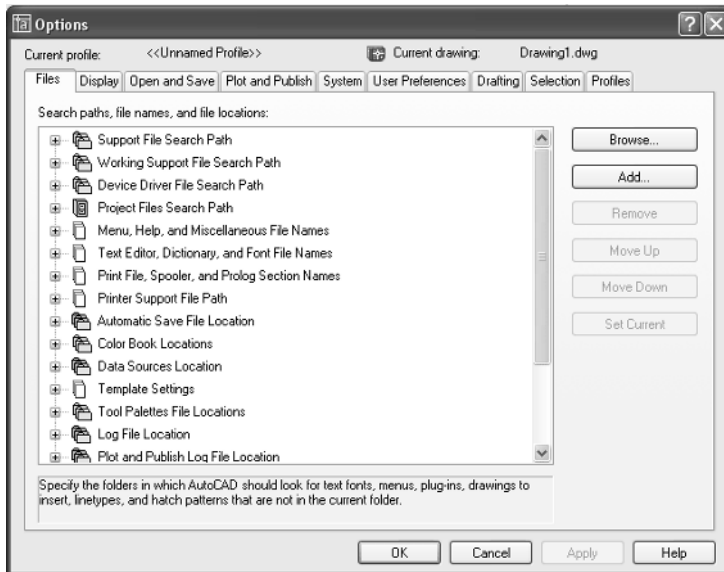


On the left end of the status bar, you'll see a coordinate readout window. In the middle are eight readout buttons (LT has only seven) that indicate various drawing modes. It is important to learn about the coordinate system and most of these drawing aids (Snap, Grid, Ortho, and Osnap) early as you learn to draw in AutoCAD or LT. They will help you create neat and accurate drawings. Polar and Otrack are advanced drawing tools and will be introduced in Chapter 5. Lwt stands for Lineweight and will be discussed in Chapter 14 in the discussion on plotting. The Model button is an advanced aid that will be covered in Chapter 13. At the far right of the status bar are small icons that indicate the presence of various features for a drawing session. These features are beyond the scope of this book.

This has been a quick introduction to the various parts of the Graphics window. I didn't mention a couple of items that might be visible on your screen. You might have scroll bars below and to the right of the drawing area, and you might have a menu on the right side of the drawing area. Both features can be useful, but they can also be a hindrance and can take up precious space in the drawing area. They won't be of any use while working your way through this book, so I suggest that you remove them for now.

To temporarily remove these features, follow these steps:

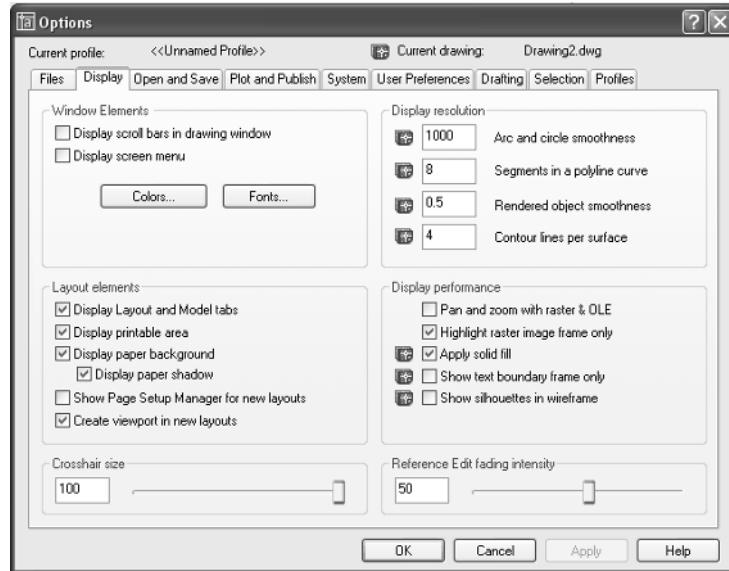
1. Choose Tools > Options to open the Options dialog box (shown in Figure 1.3). It has nine tabs (LT has only eight) across the top that act like tabs on file folders.



**FIGURE 1.3:** The Options dialog box

LT does not display the Otrack button on the status bar.

- Click the Display tab, which is shown in Figure 1.4. Focus on the rectangular area titled Window Elements. If scroll bars are visible on the lower and right edges of the drawing area, the Display Scroll Bars In Drawing Window check box will be checked.



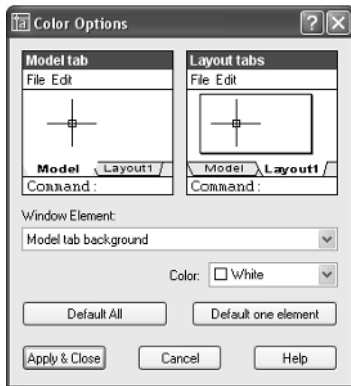
**FIGURE 1.4:** The Options dialog box open at the Display tab

**LT doesn't have the Screen menu, so the option to turn it off is not on LT's Display tab.**

- Click the check box to turn off the scroll bars. Also click the Display Screen Menu check box to turn off the screen menu. Don't click the OK button yet.

Another display setting that you might want to change at this point controls the color of the cursor and the drawing area background. The illustrations in this book show a white background and black crosshair cursor, but you might prefer to reverse the colors. To do so, follow these steps:

- In the Window Elements area of the Display tab, click the Colors button to open the Color Options dialog box (see Figure 1.5). In the middle of the dialog box, in the Window Element drop-down list box, Model Tab Background should be visible. If it's not, open the drop-down list and select it.



**FIGURE 1.5:** The Color Options dialog box

2. Move to the Color drop-down list, which is below the Window Element drop-down list. If your drawing area background is currently white, a square followed by the word *White* is displayed. Open the Color drop-down list. Scroll to Black (or the background color you want) and select it. The drawing area will now be that color, and the cursor color will change to white, as shown in the Model Tab preview window in the upper-left corner of the dialog box.
3. Click the Apply & Close button to close the Color Options dialog box.
4. Don't close the Options dialog box yet.
5. If you want the lines of your crosshair cursor to extend completely across the screen, go to the lower-left corner of the Display tab (lower-right for LT) and move the slider to change the Crosshair Size setting to 100.
6. Click OK to close the Options dialog box.

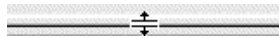
Your screen and crosshair cursor will take on their newly assigned colors, and the crosshair lines should extend across the drawing area.



**TIP** If you choose a color other than black as the drawing area background color, the color of the crosshair cursor remains the same as it was (black). To change the crosshair color, in the Color Options dialog box, open the Window Element drop-down list, and select Model Tab Pointer. Then select a color from the Color drop-down list.

## The Command Window

Just below the drawing area is the Command window. This window is actually separate from the drawing area and behaves like a Windows window—that is, you can drag it to a different place on the screen and resize it, although I don't recommend that you do this at first. If you currently have fewer than three lines of text in the window, you will need to increase the window's vertical size. To do so, move the cursor to the horizontal boundary between the drawing area and the Command window until it changes to an up-and-down arrow broken by two parallel horizontal lines.



Hold down the left mouse button and drag the cursor up by approximately the amount that one or two lines of text would take up, and then release the mouse. You should see more lines of text, but you might have to try this a couple of times to display exactly three lines. When you close the program, the new settings will be saved, and the next time you start up AutoCAD, the Command window will display three lines.

The Command window is where you give information to AutoCAD and where AutoCAD prompts you for the next step in executing a command. It is a good practice to get into the habit of keeping an eye on the Command window as you work on your drawing. Most errors occur when you are not taking a look at it frequently.

Before you begin to draw, take a close look at the menus, toolbars, and keyboard controls.



**NOTE** In many cases, you can start AutoCAD commands in a number of ways: from drop-down menus, from the toolbars, and from the keyboard. When you get used to drawing with AutoCAD, you will learn some shortcuts that start commands quickly, and you will find the way that is most comfortable for you.

# Drop-Down Menus

The menu bar, just below the title bar (see Figure 1.2 earlier in this chapter), consists of 11 words and an icon. Click any of these to display a drop-down menu. The icon on the left end and the File and Edit menus are included with all Windows-compatible applications, although they are somewhat customized to work with AutoCAD. The menu associated with the icon contains commands to control the appearance and position of the drawing area.

Commands in the File menu are for opening and saving new and existing drawing files, printing, linking on the Internet, exporting files to another application, choosing basic utility options, and exiting the application. The Edit menu contains the Undo and Redo commands, the Cut and Paste tools, and options for creating links between AutoCAD files and other files. The Help menu (the last menu on the right) works like all Windows Help menus and contains a couple of AutoCAD-specific entries as well, including some online resources and a context-sensitive help feature called the Info Palette.

The other eight menus contain the most-often-used AutoCAD commands. You will find that if you can master the logic of how the commands are organized by menu, you can quickly find the command you want. Here is a short description of each of the other AutoCAD drop-down menus:

**View** Contains tools for controlling the display of your drawing file.

**Insert** Contains commands for placing drawings and images or parts of them inside other drawings.

**Format** Contains commands for setting up the general parameters for a new drawing.

**Tools** Contains special tools for use while you are working on the current drawing, such as those for finding the length of a line or for running a special macro.

**Draw** Contains commands for creating new objects (such as lines or circles) on the screen.

**Dimension** Contains commands for dimensioning a drawing.

**Modify** Contains commands for changing existing objects in the drawing.

**Window** Contains commands for displaying currently open windows and lists currently open drawing files.