

Autodesk 官方培训教程系列（影印版）

AutoCAD 2002

专业一级与新功能

培训教程

Autodesk 公司 编著

Level 1 & Update

autodesk®

Official Training Courseware

2002



清华大学出版社

AutoCAD 2002 Level 1 & Update Official Training Courseware

AutoCAD 2002 专业一级 与新功能培训教程

Autodesk 公司 编著

清华大学出版社

(京)新登字 158 号

内 容 简 介

AutoCAD 2002 是 AutoCAD 的最新版本。包含了许多新功能特性,这些功能特性给各领域的设计工程师们和 AutoCAD 软件二次开发工程师带来全新的体验和帮助。本书是 Autodesk 公司的系列培训课程(Autodesk Official Training Courseware)之一,配合 Autodesk 授权培训中心(Autodesk Training Center)的专业一级课程使用,并增加了 AutoCAD 2002 的新功能详解。本书的目的是通过讲述 AutoCAD 2002 的各项功能,以功能任务为向导,并配合丰富详实的、具有实际应用价值的练习题,使工程师能在快速地理解和掌握 AutoCAD 2002 功能特性的同时,娴熟准确地完成设计任务,并充分体验网络环境下协同设计工具的独特优势。

AutoCAD 2002 的功能特性较多,学习和掌握它时最好循序而渐进。如果您的目标是要掌握它的基本功能,本教材中的新建图形文件、新建图形模板、显示控制命令、绘制图形对象、查询图形对象、编辑图形对象、文字注释、尺寸标注、图纸内容管理和打印图形共 10 章是需要您通读的。此外,AutoCAD 2002 的新特性,如 CAD 标准、关联尺寸、文字的改进、图层管理器、块管理器和 XML 文件输出这 6 章所涉及的高级功能,将能使您感受到设计过程中如何方便地执行标准、进行设计修改和成果共享。本教材所含的定制 DWF 文件、建立 i-drop、Web 发布和网络会议这 4 章,会让您体验网络协同设计的最新功能。

如果您想掌握以上所有功能特性,练习是最有效的途径。学以致用才能知行合一。

衷心期望本培训教材能帮助您用最短的时间熟练地掌握 AutoCAD 2002。

版权所有,翻印必究。

本书封面贴有清华大学出版社激光防伪标签,无标签者不得销售。

Copyright © 2001Autodesk, Inc.

AutoCAD 2002 Level 1 & Update Official Training Courseware

本书影印版由 Autodesk 公司授权清华大学出版社在中国境内独家出版、发行。

未经出版者书面许可,不得以任何方式复制或抄袭本书的任何部分。

北京市版权局著作权合同登记号:图字:01-2002-3821

书 名: AutoCAD 2002 专业一级与新功能培训教程

作 者: Autodesk 公司 编著

出 版 者: 清华大学出版社(北京清华大学学研大厦,邮编 100084)

<http://www.tup.tsinghua.edu.cn>

责任编辑: 章忆文

印 刷 者: 清华大学印刷厂

发 行 者: 新华书店总店北京发行所

开 本: 787×960 1/16 印张: 40.75 字数: 762 千字

版 次: 2002 年 9 月第 1 版 2002 年 9 月第 1 次印刷

书 号: ISBN 7-900643-46-X

印 数: 0001~2000

定 价: 60.00 元

Contents

Part One AutoCAD 2002 Level Official Training Courseware

Preface	3
Foreword	4
Course Objectives	4
Prerequisites	4
Using this Guide	4
Chapter Flow	5
Commands	5
Warnings and Notes	6
Key to Conventions	6
 Chapter 1	 7
Creating a New Drawing	8
Creating a New Drawing	8
Starting a New Drawing	8
Process Overview: Creating a New Drawing	8
The User Interface	9
Key Terms: User Interface	9
Process Overview: Accessing Commands	10
Creating Objects	12
Key Terms: Creating Objects	12
Process Overview: Creating Lines, Arcs, and Circles	20
Online Documentation	14
Key Terms: Online Documentation	14
Process Overview: Accessing Online Help	15
Exercise 1: Creating a Part Drawing	17

Creating a New Drawing	18
Creating Line Objects	19
Creating Curved Objects	21
Creating Hidden Lines	23
Creating Centerlines	24
Making Changes to a Part	26
Challenge Exercise: Creating a 2D Part	27
Summary	27
Questions	28
Answers.	28

Chapter 2 Creating Drawing Template Files 31

Starting Drawings with a Wizard	32
Key Terms: Startup Wizards	32
Process Overview: Using Wizards	32
Setting Units	33
Setting Area	34
Exercise 1: Starting a Drawing with the Advanced Setup Wizard	34
Defining Layers	37
Key Terms: Layers.	38
Layer Properties Manager	38
LAYER Command	39
Process Overview: Creating Layers	39
Exercise 2: Creating Layers.	41
Creating a New Layer	41
Completing Layer Properties	43
Choosing Drafting Settings	44
Key Terms: Drafting Settings	45
Process Overview: Choosing Drafting Settings.	45
Isometric Grid	47
Isoplane Command	47
Snap and Grid Angle.	47
Snap Base	47
Exercise 3: Selecting Snap and Grid Settings	48
Selecting Settings	48
Using the Angled Grid	50
Setting Options	51
Key Terms: Options Dialog Box	52
OPTIONS Command.	52
Process Overview: The Options Dialog Box	52
Exercise 4: Customizing Settings in the Options Dialog Box	54
Template Files.	55
Process Overview: Saving a Drawing Template File	55
Key Terms: Drawing Template File	55
Exercise 5: Save a Drawing as a Template File	56

Exercise 6: Start a New Drawing with a Template	58
Exercise 7: Save a Drawing as a Drawing Standards File	60
Exercise 8: Audit a Drawing using a Standards File	62
Challenge Exercise 9: Create a Mechanical Drawing Template	64
Challenge Exercise 10: Create an Architectural Template.	65
Summary	66
Questions.	66
Answers	67

Chapter 3	Display Commands	69
	Controlling the Display	70
	Key Terms: Zoom and Pan	70
	ZOOM Command	70
	PAN Command	70
	Process Overview: Using Realtime Zoom	70
	Process Overview: Other Zoom and Pan Options	71
	Using a Wheel-Type Mouse	71
	Zoom Window	71
	Zoom Extents	72
	Zoom Original	72
	Exercise 1: Using Zoom and Pan	72
	Defining and Using Named Views	73
	Key Term: Named Views	73
	VIEW Command	73
	Process Overview: Creating Named Views.	73
	Process Overview: Using Named Views	74
	Exercise 2: Using and Creating a Named View	75
	Using an Existing Named View	75
	Restoring a Named View	75
	Defining a New View	76
	Using the REGEN Command	77
	Key Terms: Regeneration	77
	REGEN Command	77
	Process Overview: Using REGEN.	77
	Other Display System Controls	78
	Key Term: Display Control	78
	VIEWRES Command	78
	REGENAUTO Command	78
	Process Overview: Display Resolution	78
	Challenge Exercise	79
	Summary	79
	Questions.	80
	Answers	80

Chapter 4	Drawing Objects	81
	Drawing Lines.	82
	LINE Command	82
	Process Overview: Creating Lines.	82
	Specifying Absolute Coordinates	83
	Process Overview: Using Absolute Coordinates	83
	Specifying Relative Coordinates	84
	Process Overview: Using Relative Coordinates.	84
	Exercise 1: Drawing Lines Using Absolute and Relative Coordinates	85
	Displaying the Cursor Location	86
	Process Overview: Displaying Coordinates	87
	Entering Polar Coordinates	87
	Process Overview: Entering Polar Coordinates.	88
	Exercise 2: Using Polar Coordinates	88
	Drawing with Polylines.	90
	PLINE Command	90
	Process Overview: Creating Polylines	91
	Exercise 3: Creating Linear Polylines	91
	Exercise 4: Creating Linear Polylines with Width	93
	Drawing Rectangles	94
	RECTANGLE Command	95
	Process Overview: Drawing Rectangles	95
	Exercise 5: Drawing Rectangles	96
	Drawing Polygons	97
	POLYGON Command	98
	Process Overview: Drawing Polygons	98
	Exercise 6: Drawing Polygons	98
	Direct Distance Entry	100
	Process Overview: Direct Distance Entry	100
	Polar Tracking.	101
	Key Term: Polar Tracking	101
	Process Overview: Changing Polar Tracking Settings.	101
	Process Overview: Using Polar Tracking to Draw Objects	103
	Exercise 7: Drawing with Polar Tracking	104
	Drawing Construction Lines	106
	XLINE Command.	107
	RAY Command	107
	Process Overview: Drawing Construction Lines	107
	Exercise 8: Drawing Construction Lines	108
	Drawing Circles	110
	CIRCLE Command	110
	Process Overview: Drawing Circles	110
	Exercise 9: Drawing Circles	111
	Drawing Arcs	112

ARC Command	114
Process Overview: Drawing Arcs.	114
Exercise 10: Drawing Arcs	114
Drawing Polylines with Arc Segments.	117
PLINE Command	117
Process Overview: Drawing Polylines with Arcs	118
Drawing Donuts	118
DONUT Command.	118
Process Overview: Drawing Donuts.	119
Exercise 11: Drawing Polylines with Arcs	119
Drawing Ellipses	121
ELLIPSE Command	121
Process Overview: Drawing Ellipses.	121
Exercise 12: Drawing Ellipses	122
Drawing Splines.	124
Key Terms: Splines	124
SPLINE Command	125
Process Overview: Drawing Splines	126
Exercise 13: Drawing Splines.	126
Drawing Points	128
POINT Command	128
Process Overview: Creating Single Points.	128
Process Overview: Point Size and Appearance	128
Placing Points Along Objects.	129
MEASURE Command	129
DIVIDE Command	130
Process Overview: Placing Points Along an Object	130
Exercise 14: Drawing Points	130
Snapping to Objects to Locate Points	132
Key Terms: Snapping to Objects.	133
Process Overview: Using Single Point Object Snaps.	135
Running Object Snaps.	136
Process Overview: Setting Running Object Snaps	137
Exercise 15: Using Object Snaps.	138
Set-Up	139
Completing the Link Arm.	139
Completing the Shower Pan	140
Completing the Roof Truss	141
Object Snap Tracking	142
Acquiring a Tracking Point	143
Clearing a Tracking Point	144
Process Overview: Turning Object Snap Tracking On	144
Process Overview: Using Object Snap Tracking and Direct Distance Entry to Specify Locations	144
Process Overview: Using Multiple Tracking Points	

to Specify Locations	145
Process Overview: Using Polar Tracking with Object Snap Tracking	146
Exercise 16: Using Object Snap Tracking	148
User Coordinate Systems	153
Key Terms: UCS	154
Process Overview: Moving the UCS Origin	154
Process Overview: Rotating the UCS and Resetting the UCS Origin	154
Changing the UCS Icon Display	155
UCS Icon Dialog Box.	156
UCSICON Command	158
Process Overview: The UCS Icon	158
Process Overview: Turning the UCS Icon On and Off and Changing Its Location	158
Exercise 17: Changing the UCS Origin	159
Challenge Exercise	161
Challenge Exercise	161
Challenge Exercise	162
Challenge Exercise	162
Summary	164
Questions	164
Answers.	166

Chapter 5 Extracting Drawing Information 167

Displaying Information About Drawing Objects	168
LIST Command	168
Process Overview: Displaying Object Information	168
Exercise 1: Displaying Object Information.	169
Measuring Locations and Distances	171
ID Command	171
DIST Command	171
Process Overview: Displaying the Location of a Point	172
Process Overview: Measuring Distances and Angles	172
Exercise 2: Measuring Locations and Distances	172
Measuring Areas	174
AREA Command	175
Process Overview: Measuring an Area by Points	175
Process Overview: Measuring the Area of Objects.	175
Process Overview: Adding and Subtracting Areas	175
Exercise 3: Measuring Areas	176
Displaying Information About the Drawing	177
STATUS Command	177
Process Overview: Displaying Drawing Status	177
Process Overview: Displaying and Entering Drawing Properties	178
Displaying the Drawing Time.	180

TIME Command	180
Process Overview: Displaying Time Information	180
Challenge Exercise	181
Challenge Exercise	181
Summary	182
Questions.	182
Answers	183
 Chapter 6 Editing Objects	 185
Selection Sets	186
Key Terms: Selection Sets	186
Process Overview: Using the SELECT Command	186
Noun/Verb Selection	187
Selection Windows	188
Irregularly Shaped Windows	189
Selection Fences	189
Selecting All Objects	190
Previous and Last Options	190
Displaying the Selection Set Options	190
Object Cycling	190
Process Overview: Using Window Selections and Fences	190
Exercise 1: Working with Selection Sets	193
Creating Selection Sets.	193
Noun/Verb Selection	194
Window and Crossing Selections	195
Exercise 2: Creating Selection Sets	196
Editing Objects by Displacement	198
Key Terms: Displacement Editing	198
COPY Command	199
MOVE Command	199
Process Overview: Displacing Objects	199
Exercise 3: Copying Objects	200
Copy Using the Windows Clipboard	202
Key Terms: Copying Using the Clipboard.	202
Process Overview: Copying Objects Using the Clipboard	202
Using Cut, Copy, and Paste	202
Additional Copy and Paste Options.	203
Drag and Drop Objects	203
Process Overview: Using Drag and Drop	204
Left Mouse Button	204
Right Mouse Button.	204
Offset and Array	205
OFFSET Command	205
ARRAY Command	205

Array Dialog Box	205
Rectangular or Polar Array	206
Selection Set	206
Number of Rows and Columns	206
Row and Column Offset	206
Angle of Array	207
Process Overview: Offsetting and Arraying Objects	208
Exercise 4: Offsetting and Arraying Objects	209
Mirroring Objects	210
Key Term: Mirroring	210
MIRROR Command	210
Process Overview: Mirroring Objects	210
Rotating Objects	211
Key Term: Rotate	211
ROTATE Command	211
Process Overview: Rotating Objects	211
Exercise 5: Creating a Part Using Edit Commands	212
Editing Objects by Resizing Them	215
Key Terms: Resizing	215
SCALE Command	215
Process Overview: Scaling Objects	215
Stretching Objects	216
STRETCH Command	216
Process Overview: Stretching Objects	216
Exercise 6: Stretching Objects	217
Lengthening Objects	218
Key Terms: Lengthen	218
LENGTHEN Command	218
Process Overview: Lengthening Objects	218
Extending Objects	219
Key Terms: Extend	219
EXTEND Command	220
Process Overview: Extending Objects	220
Trimming Objects	221
Key Terms: Trim	221
TRIM Command	221
Process Overview: Trimming Objects	221
Exercise 7: Completing a Floor Plan Using Edit	222
Creating the Perimeter and Doorway	223
Creating an Office Using Edit Commands	225
Creating More New Offices	227
Editing Objects by Modifying	228
Key Terms: Modifying Objects	228
FILLET Command	228
CHAMFER Command	229

Process Overview: Filletting Objects	229
Trim/No Trim Option	229
Filletting Circles and Arcs	230
Filletting Lines and Polylines	230
Filletting Parallel Lines	230
Filletting a Polyline	230
Process Overview: Chamfering Objects	230
Trim/No Trim Options	231
Chamfering Lines and Polylines	231
Chamfering a Polyline	231
Exercise 8: Filletting Objects	231
Modifying with the BREAK Command	233
BREAK Command	233
Process Overview: Breaking Objects	233
Editing with Grips	233
Key Terms: Grips	233
Process Overview: Using Grips	234
Exercise 9: Using Grips	234
Exercise 10: Modifying a Drawing Using Grips	235
Using Grips to Copy Objects	237
Object Grouping	238
Key Terms: Grouping	238
GROUP Command	239
Process Overview: Creating a Group.	239
Exercise 11: Creating and Editing a Group of Objects	240
Highlighting and Editing Groups	242
Editing Polyline Objects	243
Key Terms: Polyline Editing	243
PEDIT Command	243
Process Overview: Editing Polyline Objects	243
Matching Properties	244
Key Terms: Matching Properties.	244
MATCHPROP Command	244
Process Overview: Matching Properties	244
Quick Select	244
Process Overview: Using Quick Select	246
Properties Window.	247
Key Terms: Properties Window	248
Process Overview: Using the Properties Window	248
PROPERTIES Command	250
Exercise 12: Working with the Properties Window and Quick Select	250
Changing Polylines	250
Changing Linetype and Linetype Scale.	252
Challenge Exercise: Creating a Connecting Plate	253
Challenge Exercise: Creating a Swivel Plate	253

Summary	254
Questions	254
Answers.	255

Chapter 7	Annotating Drawings	257
	Using Text Styles	258
	Key Terms: Text Styles	258
	STYLE Command	258
	Process Overview: Defining Text Styles	258
	Process Overview: Editing Text Styles	259
	Text Size	260
	Process Overview: Determining Text Size	260
	Creating Single Line Text	261
	Key Terms: Line Text	261
	TEXT Command	261
	Process Overview: Creating Single Line Text	261
	Process Overview: Text Justification	262
	Special Characters	262
	Exercise 1: Adding Text Style and Single Lines of Text	262
	Adding a New Text Style.	262
	Entering Text	263
	Adding Annotation to the Axes	264
	Creating Multiline Text.	264
	Key Terms: Multiline Text	265
	MTEXT Command	265
	Process Overview: Creating Multiline Text	265
	Process Overview: Formatting Multiline Text	265
	Character Tab (Multiline Text Editor)	265
	Properties Tab (Multiline Text Editor)	266
	Line Spacing Tab (Multiline Text Editor)	266
	Find/Replace Tab (Multiline Text Editor)	266
	Adding Special Characters	267
	Keyboard Entry	267
	Process Overview: Using Character Map Symbols.	267
	Exercise 2: Creating and Formatting Multiline Text	268
	Creating Multiline Text	268
	Adjusting Justification and Spacing	269
	Editing Text	269
	DDEDIT Command	269
	Process Overview: Editing Text Values	270
	Process Overview: Editing Text Properties	270
	Process Overview: Modifying Text Properties with the Properties	
	Window	271
	Spell Checker	272

SPELL Command	272
Process Overview for the Spell Checker	273
Exercise 3: Editing Text	273
Using Text Editing Features	273
Using the Spell Checker	274
Using the SCALETEXT command	274
Using the JUSTIFYTEXT command	275
Hatch Patterns and Solid Fill.	275
Key Terms: Hatching	275
BHATCH Command	275
Process Overview: Creating a Hatch Pattern	276
Object Selection	277
Advanced Options	278
Process Overview: Creating a New Hatch Based on an Existing Pattern	278
Process Overview: Hatch Pattern Visibility	278
Editing Hatch Patterns	279
Key Term: Editing Hatch Patterns	279
HATCHEDIT Command	279
Process Overview: Editing a Hatch Pattern	280
Process Overview: Selecting Hatch Pattern Boundaries.	280
Exercise 4: Using Hatch Patterns in a Drawing	281
Creating a New Hatch Pattern	281
Using Inherit Properties to Hatch	281
Hatching Multiple Areas	282
Editing an Existing Hatch Pattern	282
Stretching a Hatch Boundary	283
Challenge Exercise: Annotating a Working Drawing	284
Text Annotation	284
Hatch Annotation	285
Summary	286
Questions.	286
Answers	287

Chapter 8 Dimensioning a Drawing 289

Adding Dimensions Using Quick Dimension	290
Key Terms: Quick Dimension	290
QDIM Command	290
Process Overview: Using Quick Dimension to Dimension a Drawing	290
Dimension Types	291
Exercise 1: Using Quick Dimensions	292
Adding Linear, Radial, and Diameter Dimensions and Leaders	293
Key Term: Leaders	293

DIMLINEAR Command	293
DIMDIAMETER Command	294
DIMRADIUS Command	294
QLEADER Command	294
Process Overview: Using Linear, Radial, and Diameter Dimensions and Leaders	294
Center Marks	296
DIMCENTER Command	296
Leader Settings	296
Exercise 2: Adding Linear, Radial, and Diameter Dimensions and Leaders	297
Adding Linear Dimensions	297
Adding Centerlines and Radial and Diameter Dimensions	300
Completing the Dimensions	301
Adding a Leader	302
Creating Industry-Standard Dimension Styles	303
Key Terms: Dimension Styles	303
DIMSTYLE Command	303
Process Overview: Creating Dimension Styles	304
Associative Dimensions	306
Dimension Style Manager	307
Preview Window	308
Editing Properties of an Existing Style	309
Overriding a Dimension Style	309
Exercise 3: Creating New Dimension Styles	311
Creating a New Style	311
Editing a Style for a Dimension Type	314
Adding Dimensions	315
Creating Another Dimension Style	316
Overriding a Dimension Style	320
Geometric Tolerancing	321
Key Term: Tolerancing	322
TOLERANCE Command	322
Process Overview: Adding Geometric Tolerances	322
Adding Tolerances Using a Leader	323
Exercise 4: Applying Geometric Tolerances	324
Applying Tolerances	324
Placing Tolerances with a Leader	326
Challenge Exercise 5: Dimensioning a Plate	328
Challenge Exercise 6: Dimensioning a Floor Plan	328
Summary	329
Questions	329
Answers.	330

Chapter 9	Managing Content	331
	Creating Blocks	332
	Key Terms: Blocks	332
	BLOCK Command	332
	Process Overview: Using the BLOCK Command.	332
	Inserting Blocks	334
	INSERT Command	335
	Insert Behavior	335
	Layer Behavior	335
	Properties Behavior	335
	Guidelines	335
	Process Overview: Inserting Blocks	335
	Process Overview: Redefining Blocks	336
	Exporting Blocks and Objects	337
	EXPORT Command	337
	WBLOCK Command	338
	Process Overview: Writing a Block to File	338
	Exercise 1: Defining and Inserting Blocks.	339
	Defining a New Block	339
	Inserting a Block	340
	Inserting a Drawing File	341
	Writing Objects to a File	342
	Multiple Design Environment	344
	Key Terms: MDE.	344
	Process Overview: Using MDE	344
	Process Overview: Working with MDE.	345
	Using the Windows Clipboard	346
	Key Terms: Windows Editing Options	346
	Process Overview: Moving Content from One Drawing to Another	347
	Exercise 2: Using Multiple Design Environments	348
	Opening Multiple Drawings	348
	Copying Properties Between Drawings	349
	Copying Objects Between Drawings	349
	DesignCenter	351
	Key Terms: DesignCenter	352
	ADCENTER Command	352
	DesignCenter Toolbar	352
	Process Overview: Viewing Content with DesignCenter	353
	Process Overview: Copying Content with DesignCenter	354
	Exercise 3: Managing Content Using Blocks and DesignCenter	355
	Challenge Exercise: Creating a Symbol Library	356
	Summary	357
	Questions.	358
	Answers	358

Chapter 10 Plotting.	359
Gathering Information	360
Key Terms: Plotting Wizard	360
PLOTTERMANAGER Command	360
Wizard	361
PCINWIZARD Command	361
Windows System Drivers	361
Optimized System Printer Drivers	361
Heidi Plotter Drivers	362
Location of PC3 Files	362
Process Overview: Using the Add-A-Plotter Wizard	363
Exercise 1: Installing a Plotter Using an HDI Plotter Driver	364
Using the Add-A-Plotter Wizard	364
Editing the PC3 File	365
Exercise 2: Installing a Plotter Using an Optimized Plotter Driver	368
Challenge Exercise: Configuring a Plotter	369
Setting Up the Plot	370
Key Terms: Plotting	370
PLOT Command	370
Plot Dialog Box	370
Drawing Orientation	371
Landscape Orientation	372
Portrait Orientation	372
Previewing the Plot	372
PREVIEW Command.	372
Full and Partial Previews	373
Plot Scale in Model Space	374
Process Overview: Plotting from Model Space	374
Exercise 4: Plot a Drawing from Model Space	375
Creating Layouts	378
Model Space, Layouts, and Paper Space	378
Key Terms: Layouts	379
Designing a Layout	380
Page Setup	380
Plot Device Tab	381
Layout Settings Tab	382
Paper Image	382
PAGESETUP Command	383
Shortcut Menu	383
Exercise 4: Plotting from the Default Viewport	385
Preparing for Plotting	385
Inserting a Drawing Border and Title Block	386
Exercise 5: Creating a Viewport in a Layout	387
Rename a Layout	388