

AutoCAD Level 1 – Stage 2

Contents

Preface	vi
Chapter I Working Effectively with AutoCAD	1-1
1.1 Setting up the Application Window	1-3
Using the Ribbon	1-4
Tool Palette Groups	1-6
1.2 Creating A Customs Workspace	1-7
Practice 1a Setting Up Workspaces	1-11
1.3 Using the Keyboard Effectively	1-12
Command Aliases	1-13
Shortcut Keys	1-14
Function Keys	1-14
Practice 1b Using The Keyboard Effectively	1-15
1.4 Working In Multiple Drawings	1-16
Quick View Drawings	1-16
Switching and Arranging Windows	1-18
Copying and Pasting Between Drawings	1-18
Match Properties Across Drawings	1-20
Practice 1c Working in Multiple Drawings	1-21
1.5 Using Grips Effectively	1-22
Changing The Base Point	1-23
Copying With Grips	1-23
Using the Reference Option With Rotate and Scale	1-24
Stretching Multiple Objects	1-25
Grip Settings	1-26
Practice 1d Using Grips Effectively	1-27
1.6 Additional Layer Tools	1-28
Changing Object Layer States	1-28
Isolating Layers	1-30
Changing an Objects Layer	1-31
Modifying Layers	1-33
Layer Walk	1-34
Practice 1e Layer Tools	1-36

Chapter 2	Accurate Positioning	2-1
2.1	Coordinate Entry	2-3
	Absolute Cartesian Coordinates (X,Y)	2-3
	Relative Cartesian Coordinates (@X,Y)	2-4
	Relative Polar Coordinates (@distance<Angle)	2-5
	Notes on Coordinate Entry	2-6
	Practice 2a Drawing Using Coordinate Entry	2-7
2.2	Locating Points With Tracking	2-9
	Object Snap Tracking review	2-9
	Temporary Tracking Point	2-9
	Practice 2b Locating Points with Tracking (Mechanical)	2-11
	Practice 2c Locating Points with Tracking (Architectural)	2-11
2.3	Construction Lines	2-13
	Construction Lines	2-13
	Rays	2-14
	Practice 2d Construction Lines	2-15
2.4	Placing Reference Points	2-16
	Changing Point Appearance	2-17
	Multiple Points	2-17
	Practice 2e Placing Points	2-19
Chapter 3	Projects – Productivity Tools	3-1
3.1	Schematic Project – Purifier Unit	3-3
3.2	Mechanical Project – 2 Views	3-5
3.3	Architectural/Civil Project – Formal Garden	3-6
3.4	Mechanical Project – Cover Plate	3-7
3.5	Architectural Project – Addition	3-8
3.6	Mechanical Project – Block	3-9
3.7	Mechanical Project – Plate	3-10
Chapter 4	Creating Blocks	4-1
4.1	Creating Blocks	4-3
	Setting Base Points and Selecting Objects	4-4
	Annotative Blocks	4-5
	Blocks and Layers	4-6
	Creating Drawing Files from Objects	4-6
	Practice 4a Creating a Local Block	4-8
	Practice 4b Create a New Drawing from Part of a Drawing	4-10

4.2	Editing Blocks	4-11
	Practice 4c Editing a Block	4-14
4.3	Removing Unused Elements	4-15
	Practice 4d Purging	4-17
Chapter 5	Blocks In Tool Palettes	5-1
5.1	Adding Blocks To Tool Palettes	5-3
	Practice 5a Adding Blocks to Tool Palettes	5-6
5.2	Modifying Tool Properties In Tool Palettes	5-7
	Modifying Tool Properties	5-7
	Redefining Blocks on Tool Palettes	5-8
	Practice 5b Modifying Tool Properties	5-10
Chapter 6	Projects – Creating and Organising Blocks	6-1
6.1	Mechanical Project – Control Panel	6-3
6.2	Architectural Project – Furniture Layout	6-4
6.3	Civil Project – Utility Layout	6-5
Chapter 7	Creating Templates	7-1
7.1	Why Use Templates?	7-3
	Drawing Standards	7-3
7.2	Controlling Units Display	7-6
	Drawing Limits	7-9
	Practice 7a Controlling Units Display	7-10
7.3	Creating New Layers	7-11
	Layer Properties Manager	7-11
	Linetypes and Lineweights	7-15
	Other Layer Options	7-16
	Practice 7b Creating and Changing New Layers	7-18
7.4	Adding Standard Layouts to Templates	7-19
	Page Setup Manager	7-20
	Practice 7c Adding Standard Layouts	7-25
7.5	Saving Templates	7-27
	Practice 7d Saving a Template	7-29

Chapter 8	Annotation Styles	8-1
8.1	Creating Text Styles	8-3
	Practice 8a Creating and Using Text Styles	8-6
8.2	Creating Dimension Styles	8-8
	Creating Dimension Sub-Styles	8-15
	Practice 8b Creating Dimension Styles (Architectural)	8-17
	Practice 8c Dimension Styles (Mechanical)	8-19
8.3	Creating Multileader Styles	8-21
	Practice 8c Creating Multileader Styles	8-25
Chapter 9	Projects – Drawing Setup and Utilities	9-1
9.1	Interiors Project	9-1
9.2	Mechanical/ Schematic Project	9-3
9.3	Civil/Map Project	9-4
9.4	Mechanical Project – Dimension Styles	9-5
Chapter 10	Advanced Layouts	10-1
10.1	Creating and Using Named Views	10-3
	Practice 10a Creating and Using Named Views	10-6
10.2	Creating Additional Viewports	10-8
	Creating Multiple Viewports	10-8
	Creating Custom Viewports	10-10
	Practice 10b Creating Additional Viewports	10-13
10.3	Layer Overrides in Viewports	10-15
	Freezing Layers in Viewports	10-15
	Overriding Layer Properties in Viewports	10-16
	Practice 10c Layer Overrides in Viewports	10-18
10.4	Additional Annotative Scale Features	10-19
	Modifying Annotative Object Scales	10-20
	Practice 10d Additional Annotative Scale Features	10-22
Chapter 11	DWF Printing and Publishing	11-1
11.1	DWF Plotting and Viewing	11-3
	Plotting DWF Files	11-3
	Autodesk Design Review	11-4
	Practice 11a DWF Plotting and Viewing	11-7

11.2	Publishing Drawing Sets	11-8
	Practice 11b Publishing Drawing Sets	11-11
Chapter 12	Projects – Drawing	12-1
12.1	Creating a Drawing Border	12-3
12.2	Mechanical Project – Drill Press Base	12-5
12.3	Architectural Project – Office Tower	12-10
12.4	P&ID Project – Oil Lubrication System	12-16
12.5	Civil Project – Warehouse Site	12-19
Appendix A	Optional Topics	A-1
A.1	How to Use QuickCalc	A-1
A.2	Additional Zoom Commands	A-3
A.3	Creating Model Space Viewports	A-5
	Command Options for New Viewports	A-7
A.4	Advanced Object Selection	A-8
A.5	Single Line Text	A-10
	Command Options for Single Line Text	A-10
	Editing Single Line Text	A-11
A.6	Other Text Tools	A-13
	Scale Text	A-13
	Justify Text	A-13
	Model Space Text & Paper Space Text	A-14
A.7	Additional Dimensioning Tools	A-15
	Adding Style Overrides	A-15
	Comparing Dimension Styles	A-15
	Inspection Dimensions	A-16
A.8	Creating Boundaries	A-18
A.9	Working With Regions	A-20
	Creating Regions	A20
	Combining Regions	A21
A.10	Temporary Overrides	A-24
A.11	Modifying Length	A-25
Chapter B	Skills Assessment	B1
B.1	Skills Assessment	B-3

Preface

The objective of *AutoCAD 2009 Level 1* is to enable students to create a basic 2D drawing in AutoCAD. Even at this fundamental level, AutoCAD is one of the most sophisticated computer applications that users are likely to encounter. Learning to use it is therefore not a trivial undertaking. To make the process easier and provide flexibility for instructors and students, the class is divided into two parts that may be taken independently.

Level 1 - Stage 1 Fundamentals (three days) covers the indispensable core topics for working with AutoCAD. The teaching strategy is to start with a few basic tools that will let the student create and edit a simple drawing. We then continue to develop those tools, as well as introducing more advanced tools throughout the course. Not every command or option is covered, because the intent is to show the most *essential* tools and concepts, these are:

- understanding the AutoCAD workspace and user interface
- using basic drawing, editing, and viewing tools
- organizing drawing objects on layers
- inserting reusable symbols (blocks)
- preparing a layout to be plotted
- adding text, hatching, and dimensions

Level 1 - Stage 2 Intermediate (two days) continues with more sophisticated techniques that will extend the user's mastery of the program. For example, here we go beyond the basic skill of *inserting* a block to learn how to *create* blocks, and beyond the basic skill of *using* a template to understand the process of *setting up* a template.

- using more advanced editing and construction techniques
- creating local and global blocks
- setting up layers, styles, and templates

Note on Practices and Project Exercises

The practices related to each topic are designed to give brief hands-on experience with a particular skill. Unless otherwise noted, the practices can be completed in under five minutes.

The Project Exercises at the end of each module offer additional, extended practice to reinforce the skills in that module. These exercises are optional, and may be used at the discretion of the instructor. The estimated time for completion is provided with each Project Exercise.

Further information about the exercises can be found in Appendix D.