Table of Contents

Dedication iii
Preface xix

Chapter 1: Introduction to AutoCAD

AutoCAD Screen Components 1-2
- Start Tab Enhanced 1-2
- Drawing Area 1-4
- Command Window 1-4
- Navigation Bar 1-6
- ViewCube 1-7
- In-canvas Viewport Controls 1-7
- Status Bar 1-7

Invoking Tools in AutoCAD 1-11
- Keyboard 1-12
- Ribbon 1-12
- Application Menu 1-13
- Tool Palettes 1-14
- Menu Bar 1-14
- Toolbar 1-15
- Shortcut Menu 1-15
- File Tabs 1-16

AutoCAD Dialog Boxes 1-19
Starting a New Drawing 1-20
- Open a Drawing 1-21
- Start from Scratch 1-21
- Use a Template 1-21
- Use a Wizard 1-22

Saving Your Work 1-26
- Save Drawing As Dialog Box 1-27

Automatic Timed Save 1-29
Creating Backup Files 1-30
- Changing Automatic Timed Saved and Backup Files into AutoCAD Format 1-30
- Using the Drawing Recovery Manager to Recover Files 1-30

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Closing a Drawing 1-31
Opening an Existing Drawing 1-31
Opening an Existing Drawing Using the Select File Dialog Box 1-32
Opening an Existing Drawing Using the Startup Dialog Box 1-34
Opening an Existing Drawing Using the Drag and Drop Method 1-35
Quitting AutoCAD 1-35
Creating and Managing Workspaces 1-35
Creating a New Workspace 1-36
Modifying the Workspace Settings 1-36
AutoCAD Help 1-37
Autodesk App Store 1-39
Save to Web & Mobile 1-41
Additional Help Resources 1-42
Self-Evaluation Test 1-42
Review Questions 1-43

Chapter 2: Getting Started with AutoCAD

Dynamic Input Mode 2-2
Enable Pointer Input 2-2
Enable Dimension Input where possible 2-3
Show command prompting and command input near the crosshairs 2-5
Show additional tips with command prompting 2-5
Drafting Tooltip Appearance 2-5
Drawing Lines in AutoCAD 2-6
The Close Option 2-7
The Undo Option 2-8
Invoking Tools Using Dynamic INPUT/Command Prompt 2-8
Coordinate Systems 2-9
Relative Coordinate System 2-9
Absolute Coordinate System 2-17
Direct Distance Entry 2-20
Erasing Objects 2-22
Canceling and Undoing Operation 2-23
Object Selection Methods 2-24
Window Selection Method 2-24
Crossing Selection Method 2-25
Lasso Selection Method 2-25
Drawing a Circle 2-27
Basic Display Commands 2-31
Zooming Drawings 2-31
Moving the view 2-32
Setting Units Type and Precision 2-32
Specifying the Format 2-33
Specifying the Angle Format 2-33

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Setting the Direction for Angle Measurement 2-34
Specifying Units for the Drawing or Block to be Inserted 2-35
Sample Output 2-35
Specifying Units for Lighting 2-35
Setting the Limits of a Drawing 2-37
Setting Limits 2-38
Limits for Architectural Drawings 2-39
Limits for Metric Drawings 2-40
Introduction to Plotting Drawings 2-41
Modifying AutoCAD Settings by Using the Options Dialog Box 2-43
Self-Evaluation Test 2-47
Review Questions 2-48

Chapter 3: Getting Started with Advanced Sketching

Drawing Arcs 3-2
Drawing Rectangles 3-10
Drawing Ellipses 3-14
Drawing Regular Polygons 3-18
Drawing Polylines 3-20
Drawing Donuts 3-26
Placing Points 3-28
Changing the Point Style and Size 3-28
Placing Multiple Points 3-29
Placing Points at Equal Distance 3-29
Placing Points at Specified Intervals 3-29
Drawing an Infinite Line 3-29
Drawing Construction Lines 3-30
Drawing Ray 3-32
Writing a Single Line Text 3-33
Working With Templates 3-33
Self-Evaluation Test 3-34
Review Questions 3-35

Chapter 4: Working with Drawing Aids

Introduction 4-2
Understanding the Concept and Use of Layers 4-2
Working with Layers 4-3
Creating New Layers 4-4
Making a Layer Current 4-5
Controlling the Display of Layers 4-6
Arranging Layers in Increasing Order 4-10
Arranging Layers in Increasing Order with Respect to First Digit 4-11
Merging Layers 4-12
Deleting Layers 4-13

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Managing the Display of Columns 4-13
Selective Display of Layers 4-14
Layer States 4-16
Reconciling New Layers 4-17
Isolating and Unisolating Layers 4-17
Controlling the Layer Settings 4-18
Toggle Override Highlight 4-19
Object Properties 4-23
Changing the Color 4-23
Changing the Linetype 4-23
Changing the Lineweight 4-24
Changing the Plot Style 4-25
Changing Object Properties using the PROPERTIES Palette 4-25
Changing Object Properties using the Quick Properties Palette 4-26
Global and Current Linetype Scaling 4-27
LTSCALE Factor for Plottings 4-27
Changing the Linetype Scale Using the PROPERTIES Palette 4-28
Working with the DesignCenter 4-28
Drafting Settings Dialog Box 4-29
Setting Grid 4-30
Setting Snap 4-31
Snap Type 4-31
Drawing Straight Lines Using the ORTHOMODE 4-32
Working with Object Snap 4-33
Running Object Snap Mode 4-45
Overriding the Running Snap 4-46
Cycling through Snaps 4-46
Setting the Priority for Coordinate Entry 4-47
Using AutoTracking 4-48
Object Snap Tracking 4-48
Polar Tracking 4-49
AutoTrack Settings 4-50
Function and Control Keys 4-50
Self-Evaluation Test 4-51
Review Questions 4-51

Chapter 5: Editing Sketched Objects-I

Creating a Selection Set 5-2
Editing Sketches 5-7
Moving Sketched Objects 5-7
Copying Sketched Objects 5-8
Creating Multiple Copies 5-9
Creating an Array of Selected Objects 5-9
Creating a Single Copy 5-10

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Pasting Contents from the Clipboard 5-11
Pasting Contents Using the Original Coordinates 5-11
Offsetting Sketched Objects 5-11
Through Option 5-12
Erase Option 5-12
Layer Option 5-13
Rotating Sketched Objects 5-13
Scaling the Sketched Objects 5-15
Filleting the Sketches 5-17
Chamfering the Sketches 5-20
Blending the Curves 5-23
Trimming the Sketched Objects 5-24
Extending the Sketched Objects 5-28
Stretching the Sketched Objects 5-31
Lengthening the Sketched Objects 5-32
Arraying the Sketched Objects 5-33
Rectangular Array 5-34
Polar Array 5-41
Path Array 5-47
Mirroring the Sketched Objects 5-50
Text Mirroring 5-50
Breaking the Sketched Objects 5-51
Placing Points at Specified Intervals 5-53
Dividing the Sketched Objects 5-54
Joining the Sketched Objects 5-55
Self-Evaluation Test 5-59
Review Questions 5-60

Chapter 6: Editing Sketched Objects-II

Introduction to Grips 6-2
Types of Grips 6-2
Adjusting Grip Settings 6-3
Editing Objects by Using Grips 6-5
Stretching the Objects by Using Grips (Stretch Mode) 6-5
Moving the Objects by Using Grips (Move Mode) 6-6
Rotating the Objects by Using Grips (Rotate Mode) 6-7
Scaling the Objects by Using Grips (Scale Mode) 6-9
Mirroring the Objects by Using Grips (Mirror Mode) 6-10
Editing a Polyline by Using Grips 6-11
Loading Hyperlinks 6-13
Editing Gripped Objects 6-13
Changing the Properties Using the PROPERTIES Palette 6-13
Matching the Properties of Sketched Objects 6-14
Quick Selection of Sketched Objects 6-15

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Cycling Through Selection 6-17
Managing Contents Using the DesignCenter 6-17
Folders Tab 6-19
Open Drawings Tab 6-20
History Tab 6-20
Making Inquiries About Objects and Drawings 6-22
Measuring Area of Objects 6-23
Measuring the Distance between Two Points 6-26
Identifying the Location of a Point 6-27
Listing Information about Objects 6-27
Listing Information about all Objects in a Drawing 6-28
Checking Time-Related Information 6-28
Obtaining Drawing Status Information 6-29
Displaying Drawing Properties 6-30
Basic Display Options 6-30
Redrawing the Screen 6-31
Regenerating Drawings 6-31
Zooming Drawings 6-32
Panning Drawings 6-39
Creating Views 6-41
New View 6-44
Understanding the Concept of Sheet Sets 6-44
Creating a Sheet Set 6-45
Adding a Subset to a Sheet Set 6-49
Adding Sheets to a Sheet Set or a Subset 6-50
Archiving a Sheet Set 6-50
Resaving all Sheets in a Sheet Set 6-51
Placing Views on a Sheet of a Sheet Set 6-51
Self-Evaluation Test 6-52
Review Questions 6-53

Chapter 7: Creating Texts and Tables

Annotative Objects 7-2
Annotation Scale 7-2
Assigning Annotative Property and Annotation Scales 7-2
Customizing Annotation Scale 7-3
Multiple Annotation Scales 7-3
Assigning Multiple Annotation Scales Manually 7-3
Assigning Multiple Annotation Scales Automatically 7-4
Controlling the Display of Annotative Objects 7-5
Creating Text 7-6
Writing Single Line Text 7-6
Entering Special Characters 7-11
Creating Multiline Text 7-11
Editing Text 7-29

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Editing Text Using the TEXTEDIT Command 7-29
Editing Text Using the PROPERTIES Palette 7-29
Modifying the Scale of the Text 7-30
Modifying the Justification of the Text 7-31
Aligning Text 7-31
Combine Text 7-32
Inserting Table in the Drawing 7-32
Creating a New Table Style 7-38
Setting a Table Style As Current 7-41
Modifying a Table Style 7-41
Modifying Tables 7-42
Creating Text Styles 7-47
Creating Annotative Text 7-49
Checking Spelling 7-50
Text Quality and Text Fill 7-51
Finding and Replacing Text 7-52
Creating Title Sheet Table in a Sheet Set 7-53
Self-Evaluation Test 7-55
Review Questions 7-56

Chapter 8: Basic Dimensioning, Geometric Dimensioning, and Tolerancing

Need for Dimensioning 8-2
Dimensioning in AutoCAD 8-2
Fundamental Dimensioning Terms 8-3
Dimension Line 8-3
Dimension Text 8-3
Arrowheads 8-3
Extension Lines 8-4
Leader 8-4
Center Mark and Centerlines 8-5
Alternate Units 8-5
Tolerances 8-6
Limits 8-6
Associative Dimensions 8-6
Definition Points 8-7
Annotative Dimensions 8-8
Selecting Dimensioning Tools 8-8
Dimensioning a Number of Objects Together 8-9
Creating Linear Dimensions 8-10
Creating Aligned Dimensions 8-14
Creating Arc Length Dimensions 8-15
Creating Rotated Dimensions 8-16
Creating Baseline Dimensions 8-17

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Creating Continued Dimensions 8-18
Creating Angular Dimensions 8-19
Creating Diameter Dimensions 8-23
Creating Jogged Dimensions 8-23
Creating Radius Dimensions 8-24
Creating Jogged Linear Dimensions 8-25
Generating Center Marks and Centerlines 8-25
Creating Associative Centermarks 8-26
Creating Associative Centerlines 8-27
Creating Ordinate Dimensions 8-28
Maintaining Equal Spacing between Dimensions 8-29
Creating Dimension Breaks 8-30
Creating Inspection Dimensions 8-32
Working with True Associative Dimensions 8-33
    Removing the Dimension Associativity 8-34
    Converting a Dimension into a True Associative Dimension 8-34
Drawing Leaders 8-35
Multileaders 8-40
Drawing Multileaders 8-40
Adding Leaders to Existing Multileader 8-42
Removing Leaders from Existing Multileader 8-42
Aligning Multileaders 8-43
Collecting Multiple Leaders 8-46
Geometric Dimensioning and Tolerancing 8-47
    Geometric Characteristics and Symbols 8-48
Adding Geometric Tolerance 8-49
Complex Feature Control Frames 8-51
    Combining Geometric Characteristics 8-51
    Composite Position Tolerancing 8-53
Using Feature Control Frames with Leaders 8-54
Projected Tolerance Zone 8-54
Creating Annotative Dimensions, Tolerances, Leaders, and Multileaders 8-58
Self-Evaluation Test 8-58
Review Questions 8-59

Chapter 9: Editing Dimensions

Editing Dimensions Using Editing Tools 9-2
    Editing Dimensions by Stretching 9-2
    Editing Dimensions by Trimming and Extending 9-4
    Flipping Dimension Arrow 9-5
Modifying the Dimensions 9-5
Editing the Dimension Text 9-7
Updating Dimensions 9-8
Editing Dimensions with Grips 9-8
Editing Dimensions Using the PROPERTIES Palette 9-8

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Model Space and Paper Space Dimensioning 9-12
Self-Evaluation Test 9-14
Review Questions 9-14

Chapter 10: Dimension Styles, Multileader Styles, and System Variables

Using Styles and Variables to Control Dimensions 10-2
Creating and Restoring Dimension Styles 10-2
New Dimension Style Dialog box 10-3
Controlling the Dimension Text Format 10-11
Fitting Dimension Text and Arrowheads 10-16
Formatting Primary Dimension Units 10-19
Formatting Alternate Dimension Units 10-22
Formatting the Tolerances 10-24
Dimension Style Families 10-28
Using Dimension Style Overrides 10-31
Comparing and Listing Dimension Styles 10-33
Using Externally Referenced Dimension Styles 10-33
Creating and Restoring Multileader Styles 10-34
Modify Multileader Style Dialog Box 10-35
Self-Evaluation Test 10-41
Review Questions 10-42

Chapter 11: Hatching Drawings

Hatching 11-2
    Hatch Patterns 11-2
    Hatch Boundary 11-2
Hatching Drawings Using the Hatch Tool 11-3
Panels in the Hatch Creation Tab 11-4
Creating Annotative Hatch 11-17
Hatching the Drawing Using the Tool Palettes 11-18
    Drag and Drop Method 11-18
    Select and Place Method 11-18
    Modifying the Properties of the Predefined Patterns available in Tool Palettes 11-19
Hatching Around Text, Dimensions, and Attributes 11-20
Editing Hatch Patterns 11-20
    Using the Hatch Editor Tab 11-20
    Using the Edit Hatch Tool 11-21
    Using the Properties Tool 11-22
Editing the Hatch Boundary 11-24
    Using Grips 11-24

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Trimming the Hatch Patterns 11-25
Using AutoCAD Editing Tools 11-27
Hatching Blocks and Xref Drawings 11-27
Creating a Boundary Using Closed Loops 11-28
Other Features of Hatching 11-29
Self-Evaluation Test 11-30
Review Questions 11-31

Chapter 12: Model Space Viewports, Paper Space Viewports, and Layouts

Model Space and Paper Space/Layouts 12-2
Model Space Viewports (Tiled Viewports) 12-2
Creating Tiled Viewports 12-2
Making a Viewport Current 12-5
Joining Two Adjacent Viewports 12-5
Splitting and Resizing Viewports in Model Space 12-7
Paper Space Viewports (Floating Viewports) 12-7
Creating Floating Viewports 12-8
Creating Rectangular Viewports 12-9
Creating Polygonal Viewports 12-10
Converting an Existing Closed Object into a Viewport 12-11
Temporary Model Space 12-11
Editing Viewports 12-13
Controlling the Display of Objects in Viewports 12-13
Locking the Display of Objects in Viewports 12-13
Controlling the Display of Hidden Lines in Viewports 12-14
Clipping Existing Viewports 12-14
Maximizing Viewports 12-15
Controlling the Properties of Viewport Layers 12-16
Controlling the Layers in Viewports Using Layer Properties Manager 12-18
Paper Space Linetype Scaling (PSLTSCALE System variable) 12-20
Inserting Layouts 12-21
Importing Layouts to Sheet Sets 12-24
Inserting a Layout Using the Wizard 12-24
Defining Page Settings 12-24
Working with the MVSETUP Command 12-26
Converting the Distance Between Model Space and Paper Space 12-30
Controlling the Display of Annotative Objects in Viewports 12-31
Self-Evaluation Test 12-33
Review Questions 12-34

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Chapter 13: Plotting Drawings

Plotting Drawings in AutoCAD 13-2
Plotting Drawings Using the Plot Dialog Box 13-2
Adding Plotters 13-10
Editing the Plotter Configuration 13-11
Importing PCP/PC2 Configuration Files 13-13
Setting Plot Parameters 13-13
    Working with Page Setups 13-13
    Importing a Page Setup 13-16
Using Plot Styles 13-17
    Adding a Plot Style 13-17
    Plot Style Table Editor 13-19
    Applying Plot Styles 13-23
    Setting the Current Plot Style 13-24
Plotting Sheets in a Sheet Set 13-27
Self-Evaluation Test 13-28
Review Questions 13-28

Chapter 14: Template Drawings

Creating Template Drawings 14-2
Standard Template Drawings 14-2
Loading a Template Drawing 14-7
Customizing Drawings with Layers and Dimensioning Specifications 14-9
Customizing a Drawing with Layout 14-13
Customizing Drawings with Viewports 14-16
Customizing Drawings According to Plot Size and Drawing Scale 14-18
Self-Evaluation Test 14-22
Review Questions 14-23

Chapter 15: Working with Blocks

The Concept of Blocks 15-2
Converting Entities into a Block 15-2
Inserting Blocks 15-5
Smart Blocks: Placement New 15-6
Samrt Blocks: Re-placement New 15-7
Creating and Inserting Annotative Blocks 15-14
    Block Editor 15-17
Dynamic Blocks 15-18
Adding Parameter and Action Simultaneously Using Parameter Sets 15-36
Inserting Blocks Using the DesignCenter 15-37
Using Tool Palettes to Insert Blocks 15-37

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Inserting Blocks in the Drawing 15-38
Modifying Properties of the Blocks in the Tool Palettes 15-38
Adding Blocks in Tool Palettes 15-39
Drag and Drop Method 15-40
Shortcut Menu 15-40
Modifying Existing Blocks in the Tool Palettes 15-40
Layers, Colors, Linetypes, and Lineweights for Blocks 15-41
Nesting of Blocks 15-42
Inserting Multiple Blocks 15-44
Creating Drawing Files Using the Write Block Dialog box 15-45
Defining the Insertion Base Point 15-47
Editing Blocks 15-48
Editing Blocks in Place 15-48
Exploding Blocks Using the XPLODE Command 15-51
Renaming Blocks 15-53
Deleting Unused Blocks 15-54
Applying Constraints to Blocks 15-54
Self-Evaluation Test 15-61
Review Questions 15-61

Chapter 16: Defining Block Attributes

Understanding Attributes 16-2
Defining Attributes 16-2
Editing Attribute Definition 16-7
Using the PROPERTIES Palette 16-8
Inserting Blocks with Attributes 16-8
Managing Attributes 16-11
Extracting Attributes 16-17
Controlling the Attribute Visibility 16-35
Editing Block Attributes 16-36
Editing Attributes Using the Enhanced Attribute Editor 16-36
Editing Attributes Using the Edit Attributes Dialog Box 16-38
Global Editing of Attributes 16-40
Redefining a Block with Attributes 16-45
In-place Editing of Blocks with Attributes 16-45
Inserting Text Files in the Drawing 16-46
Self-Evaluation Test 16-47
Review Questions 16-47

CHAPTERS AVAILABLE FOR FREE DOWNLOAD

In this textbook three chapters have been given for free download. You can download these chapters from our website *www.cadcim.com*. To download these chapters follow the given path: *Textbooks > CAD/CAM > AutoCAD Basic and Intermediate > AutoCAD 2024: A Problem-Solving Approach, Basic and Intermediate > Chapters for Free Download.*Next, click on the chapter name that you want to download.

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Chapter 17: Conventional Dimensioning and Projection Theory Using AutoCAD

Dimensioning 17-2
Dimension Units 17-2
Inch Units 17-2
SI (Metric) Units 17-3
Dimensioning Components 17-4
Common Rules For Dimensioning 17-4
Dimensioning of Rounds and Fillets 17-12
Dimensioning of Repetitive Features 17-13
Working Drawings 17-14
Detail Drawing 17-14
Assembly Drawing 17-14
Bill of Materials 17-15
Multiview Drawings 17-15
Understanding the X, Y, and Z Axes 17-17
Orthographic Projections 17-17
Positioning Orthographic Views 17-20
Sectional Views 17-25
Auxiliary Views 17-36
Self-Evaluation Test 17-41
Review Questions 17-42

Chapter 18: Concepts of Geometric Dimensioning and Tolerancing

History of Tolerances and Allowances 18-2
Methods of Tolerancing 18-2
Limit Dimensioning 18-3
Plus and Minus Tolerancing 18-4
Geometric Tolerances 18-4
Form Tolerances 18-10
Profile Tolerances 18-20
Orientation Tolerances 18-23
Location Tolerances 18-26
Runout Tolerances 18-30
Fits 18-34
Hole Basis System 18-34
Shaft Basis System 18-35
Standards of Fits 18-40
Standard Inch Fits 18-40
Standard Metric Fits 18-43
Self-Evaluation Test 18-49
Review Questions 18-50

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com

Chapter 19: Isometric Drawings

Isometric Drawings	19-2
Isometric Projections	19-2
Isometric Axes and Planes	19-3
Setting the Isometric Grip and Snap	19-3
Drawing Isometric Circles	19-7
Creating Fillets in Isometric Drawings	19-8
Dimensioning Isometric Objects	19-8
Isometric Text	19-10
Self-Evaluation Test	19-11
Review Questions	19-12
Index	**I-1**

Evaluation Copy. Do not reproduce. For information visit www.cadcim.com