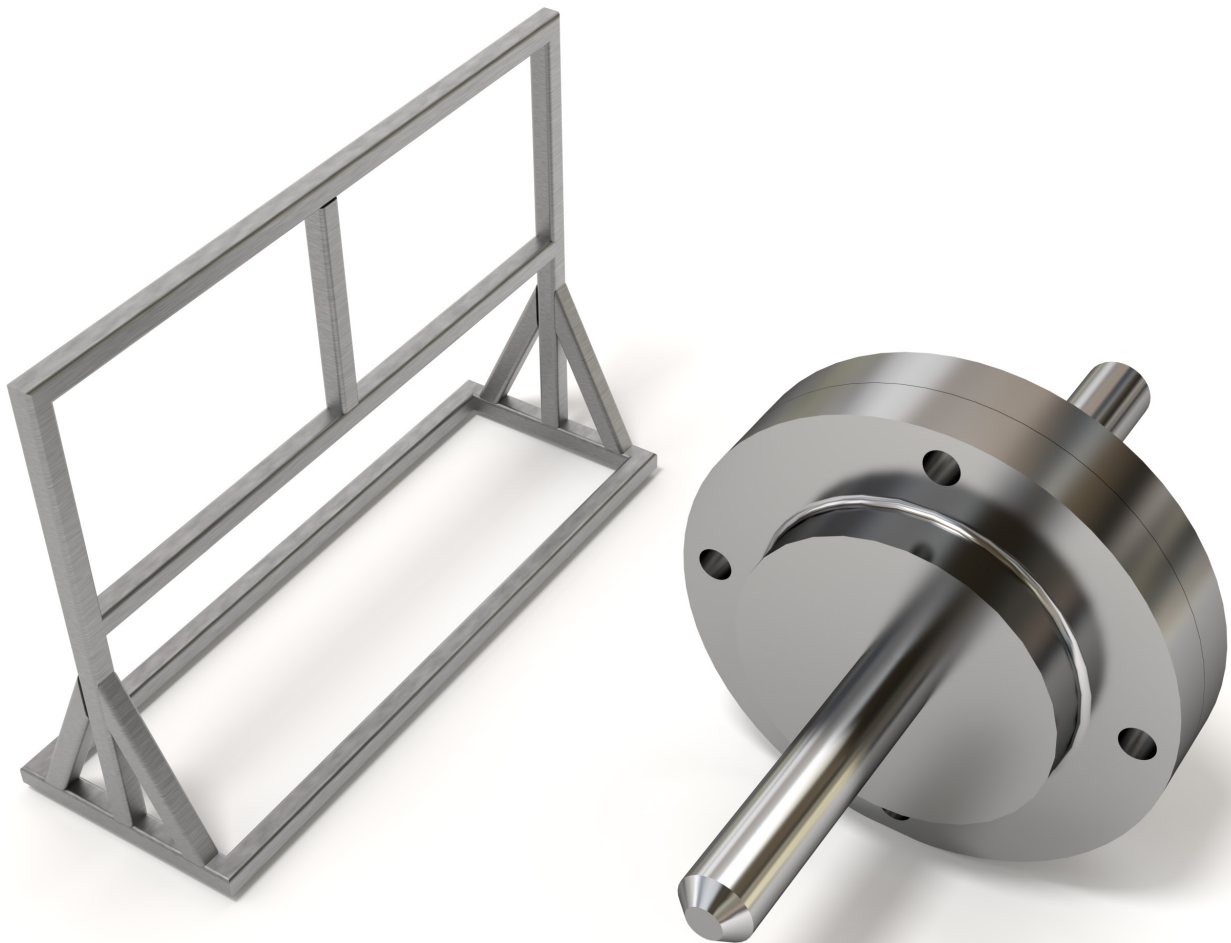


Autodesk® Inventor® 2019 Essentials Plus

Daniel T. Banach & Travis Jones

NEW
Covers iParts, iAssembly,
and Frame Generator



Visit the following websites to learn more about this book:



[amazon.com](https://www.amazon.com)

[Google books](https://books.google.com)

[BARNES & NOBLE](https://www.barnesandnoble.com)

Table of Contents

Introduction	vii
Chapter 1 – Getting Started	1
Introduction	1
Objectives	1
Getting started with Autodesk Inventor	2
User Interface.....	2
File Tab.....	4
Ribbon	6
Quick Access Toolbar.....	7
Open Files	7
New Files	9
File Information.....	10
Save File Options.....	11
Application Options.....	13
Exercise 1-1: User Interface	15
Command Entry.....	18
Help System.....	20
Projects in Autodesk Inventor.....	21
Autodesk Vault	26
Exercise 1-2: Projects	27
Changing your Viewpoint.....	29
Exercise 1-3: Viewing a Model	33
Checking Your Skills.....	37
Chapter 2 – Sketching, Constraining, and Dimensioning.....	39
Introduction	39
Objectives	39
Part and Sketch Application Options.....	40
Units	43
Templates.....	44
Creating a Part File	46
Step 1 — Sketch the 2D Outline of the Part	49
Exercise 2-1: Creating A Sketch With Lines	56
Exercise 2-2: Creating a sketch with tangencies.....	58
Step 2 — Constraining the Sketch	59
Exercise 2-3: Adding and Displaying Constraints.....	65
Step 3 — Adding Dimensions Manually	69
Exercise 2-4: Constraining and Dimensioning a Sketch.....	76

Measure Command	80
Region Properties.....	82
Inserting an AutoCAD File	83
Open Other File Types	86
Exercise 2-5: Inserting AutoCAD Data	87
Applying Your Skills	90
Checking Your Skills	92
Chapter 3 – Creating and Editing Sketched Features	93
Introduction.....	93
Objectives	93
Features	94
Understanding the Browser.....	95
Switching Environments.....	96
Direct Manipulation	97
Minimize Dialog Box.....	98
Extrude a Sketch	98
Exercise 3-1: Extruding a Sketch.....	104
Linear Diameter Dimensions	106
Revolve A Sketch.....	108
Exercise 3-2: Revolving a Sketch	112
Primitive Shapes/Features.....	114
Secondary 2D Sketched Features.....	116
Select Other-Face Cycling	117
Slice Graphics	118
Exercise 3-3: Sketch Features	119
Editing a Feature and Sketch.....	121
Exercise 3-4: Editing Features and Sketches	124
Projecting Geometry	125
Exercise 3-5: Projecting Geometry	127
Part Material, Properties and Appearance.....	130
Applying Your Skills	133
Checking Your Skills.....	137
Chapter 4 – Creating Placed Features	139
Introduction.....	139
Objectives	139
Filletts	140
Chamfers.....	147
Exercise 4-1: Creating Filletts And Chamfers.....	152
Holes	154

Table of Contents

Exercise 4-2: Creating Holes	159
Shelling.....	165
Exercise 4-3: Shelling A Part.....	167
Work Features.....	168
Exercise 4-4: Creating Work Axes	171
Exercise 4-5: Creating Work Planes And A UCS.....	180
Patterns	187
Exercise 4-6: Creating A Rectangular Pattern	190
Exercise 4-7: Creating Circular Pattern	195
Exercise 4-8: Creating a Pattern Along a Nonlinear Path.....	197
Sketch Driven Pattern	200
Exercise 4-9: Sketch Driven Pattern.....	201
3D Printing – Additive Manufacturing	202
Applying Your Skills.....	204
Checking Your Skills.....	206
Chapter 5 – Creating and Editing Drawing Views	207
Introduction	207
Objectives	207
Drawing Options.....	208
Creating a Drawing.....	209
Drawing Sheet Preparation	211
Creating Drawing Views	214
Exercise 5-1: Creating A Multiview Drawing	218
Exercise 5-2: Creating Auxiliary, Section, And Detail Views.....	232
Exercise 5-3: Creating Break View	237
Editing Drawing Views	239
Exercise 5-4: Editing Drawing Views	242
Annotations.....	244
Exercise 5-5: Adding Centerlines	250
Adding Dimensions to a Drawing View	253
Exercise 5-6: Adding Dimensions	259
Exercise 5-7: Creating Baseline Dimensions And Chain Dimensions.....	269
Adding Text and Additional Symbols	274
Exercise 5-8: Adding Annotations.....	278
Exercise 5-9: Creating Hole Tables	283
Shortcut For Opening Referenced Files.....	287
Create a 3D PDF.....	288
3D Annotations / Model-Based Definition (MBD)	290
Applying Your Skills.....	295

Checking Your Skills	297
Chapter 6 – Creating and Documenting Assemblies	299
Introduction	299
Objectives	299
Assembly Options	300
Creating Assemblies	301
Adding Assembly Constraints	312
Moving and Rotating Components	322
Editing Assembly Constraints	323
Exercise 6-1: Assembling Parts	325
Assembly Joints	330
Exercise 6-2: Assembly Joints	334
Additional Assembly Commands	336
Adaptivity	340
Exercise 6-3: Designing a Part in the Context of an Assembly	341
Patterning Components	346
Exercise 6-4: Patterning Components	349
Analysis Commands	351
Exercise 6-5: Analyzing An Assembly	354
Driving a Constraint	355
Exercise 6-6: Driving a Constraint	357
Creating a Presentation File	360
Exercise 6-7: Creating a Presentation Storyboard	371
Creating Drawing Views from Assemblies and Presentation Files	377
Bill of Material (BOM)	378
Exercise 6-8: Editing a Bill of Material (BOM)	381
Creating Balloons	384
Parts List	390
Exercise 6-9: Creating a Drawing from an Assembly	394
Applying Your Skills	402
Checking Your Skills	407
Chapter 7 – Advanced Modeling Techniques	409
Introduction	409
Objectives	409
Dimension Display, Relationships, and Equations	410
Parameters	412
Exercise 7-1: Relationships and Parameters	417
iParts	421
Exercise 7-1-2: Creating and Placing an iPart	430

Table of Contents

iAssemblies.....	437
Exercise 7-1-3: Creating and Placing an iAssembly.....	443
Sectioning a Part or Components in an Assembly.....	448
Design View Representations in A Part or an Assembly File.....	450
Emboss Text and Closed Profiles.....	450
Exercise 7-2: Creating Text and Emboss Features.....	454
Sweep Features.....	459
Exercise 7-3: Creating Sweep Features.....	464
3D Sketching.....	466
3D Lines.....	470
Create a 3D Sweep.....	471
Import Points.....	471
Exercise 7-4: 3D Sketch & Sweep Features.....	473
Coil Features.....	478
Loft Features.....	481
Exercise 7-5: Creating a Loft Feature.....	486
Freeform Modeling.....	490
Split a Part or Face.....	493
Exercise 7-6: Splitting a Part Into Multiple Solid Bodies.....	494
Mirror Features.....	497
Suppressing Features.....	499
Reordering A Feature.....	500
Feature Rollback.....	500
Content Center.....	502
Introduction to Stress Analysis.....	503
Exercise 7-7: Run a Stress Analysis On A Part.....	513
Exercise 7-8: Run A Stress Analysis On An Assembly.....	516
The Frame Generator.....	520
Exercise 7-9: Creating a Frame.....	523
Applying Your Skills.....	530
Checking Your Skills.....	533
Chapter 8 – Introduction to Sheet Metal Design.....	535
Introduction.....	535
Objectives.....	535
Sheet Metal Design.....	536
Creating a Sheet Metal Part.....	536
Sheet Metal Environment.....	537
Sheet Metal Defaults, Rules and Styles.....	538
Exercise 8-1: Editing a Sheet Metal Style and Rule.....	545

Face.....	548
Contour Flange.....	550
Flange.....	553
Exercise 8-2: Creating Sheet Metal Parts.....	556
Hem.....	560
Bend.....	562
Cut.....	564
Fold.....	566
Corner Round.....	568
Exercise 8-3: Creating Bend, Cut, Hem and Fold Features.....	569
Flat Pattern.....	576
Detailing Sheet Metal Parts.....	578
Exercise 8-4: Creating Flat Pattern and Documenting a Sheet Metal Part.....	579
Applying Your Skills.....	583
Checking Your Skills.....	584
Index.....	585