

Roger Toogood, Ph.D.

Creo® Parametric 6.0 Advanced Tutorial



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

Preface	i
About the Project	i
Acknowledgments	ii
Table of Contents	iii
PROJECT PARTS QUICK REFERENCE CHART	ix

Lesson 1 : Customization Tools and Project Introduction

Synopsis:	1 - 1
Overview	1 - 1
Configuration Settings	1 - 1
Configuration Files (<i>config.pro</i>)	1 - 3
The Configuration File Editor	1 - 4
Adding Settings to <i>config.pro</i>	1 - 5
Saving Your <i>config.pro</i> Settings	1 - 7
Loading a Configuration File	1 - 7
Deleting Configuration Options	1 - 7
Checking Your Configuration Options	1 - 7
Customizing the Toolbars	1 - 8
Customizing Ribbon Tabs and Groups	1 - 9
Keyboard Shortcuts - Hotkeys	1 - 11
Keyboard Shortcuts - Mapkeys	1 - 11
Listing Current Mapkeys	1 - 12
Creating Mapkeys	1 - 13
Creating a Customized Part Template	1 - 14
Setting the Default Part Template	1 - 15
Using the New Part Template	1 - 15
Adding Mapkeys to Ribbons	1 - 16
Introduction to the Project	1 - 16
Summary	1 - 18
Questions for Review	1 - 18
Exercises	1 - 19
Project Exercises	1 - 20

Lesson 2 : Helical Sweeps and Variable Section Sweeps

Synopsis:	2 - 1
Overview	2 - 1
Helical Sweeps	2 - 2
Constant Profile/Constant Pitch	2 - 3
Variable Profile/Variable Pitch	2 - 5
Variable Section Sweeps	2 - 7
Some Definitions	2 - 7

Setting the <i>Normal</i> Direction	2 - 8
Using the <i>X-Trajectory</i> Option	2 - 12
Auxiliary Trajectories and Variable Sections	2 - 15
Using Additional Trajectories	2 - 20
Variable Sections using <i>trajpar</i>	2 - 22
Using a <i>Graph</i> Feature to Control Section Dimensions	2 - 23
Summary of Variable Section Sweeps	2 - 26
Conclusion	2 - 26
Questions for Review	2 - 27
Project Exercises	2 - 28

Lesson 3 : Advanced Rounds, Drafts and Tweaks

Synopsis	3 - 1
Overview	3 - 1
Rounds	3 - 1
The On-Line Help	3 - 3
Creating a Single Round	3 - 4
1) Constant Radius	3 - 4
2) Variable Radius Rounds	3 - 7
3) Through Curve Rounds	3 - 9
4) Full Rounds	3 - 10
Round Sets and Transitions	3 - 12
Creating Multiple Round Sets	3 - 12
More Round Transitions	3 - 13
Drafts, Ribs and Tweaks	3 - 16
Ribs	3 - 18
Trajectory Ribs	3 - 18
Profile Ribs	3 - 19
Drafts	3 - 19
Lips	3 - 24
Ears	3 - 25
Questions for Review	3 - 26
Project Exercises	3 - 28

Lesson 4 : Patterns and Family Tables

Synopsis	4 - 1
Overview	4 - 1
Advanced Patterns	4 - 1
Regeneration Options	4 - 3
Dimension Patterns	4 - 4
Using Pattern Relations	4 - 7
Editing Pattern Relations	4 - 10
Bi-directional and Group Patterns	4 - 10
Bi-directional Patterns	4 - 12

Some More Pattern Relations	4 - 12
Table Patterns	4 - 14
Modifying Dimension Symbols	4 - 14
Creating the Pattern Table	4 - 14
Reference Patterns	4 - 16
Fill Patterns	4 - 17
Family Tables	4 - 19
Creating the Generic Part	4 - 20
Creating the Family Table	4 - 21
Verifying the Family Table	4 - 23
Examining Instances	4 - 23
Adding Features to the Family Table	4 - 24
Child Features in the Generic Part	4 - 26
Manipulating Parts Containing Family Tables	4 - 28
Locked Instances	4 - 30
Adding Features to an Instance	4 - 30
Questions for Review	4 - 32
Project Exercises	4 - 33

Lesson 5 : User Defined Features (UDFs)

Synopsis	5 - 1
Overview	5 - 1
Introduction to User Defined Features	5 - 1
Definitions	5 - 2
Creating and Using UDFs	5 - 3
Exercise #1: Standalone, Independent	5 - 4
Creating the Original Model	5 - 4
Creating the UDF	5 - 5
Using the UDF	5 - 6
Exercise #2: Multi-feature UDF with Family Table	5 - 9
Creating the Original Model	5 - 10
Creating the UDF	5 - 12
Setting <i>Var Dims</i>	5 - 13
Creating the Family Table	5 - 13
Using The UDF with Family Table	5 - 14
Exercise #3: Subordinate UDF	5 - 17
Creating the Original Model	5 - 17
Creating the UDF	5 - 18
Using the UDF	5 - 18
Exploring the Model	5 - 19
Disassociating a UDF	5 - 20
The Creo UDF Library	5 - 20
Conclusion	5 - 21
Questions for Review	5 - 23
Project Exercises	5 - 24

Lesson 6 : Pro/PROGRAM and Layers

Synopsis	6 - 1
Overview	6 - 1
Pro/PROGRAM	6 - 1
PROGRAM Elements	6 - 2
Syntax of PROGRAM Statements	6 - 2
The <i>INPUT</i> Syntax	6 - 3
The <i>RELATIONS</i> Syntax	6 - 3
The <i>IF...ENDIF</i> Syntax	6 - 3
Example: A simple bracket with optional rib	6 - 4
Creating the Part	6 - 5
Creating <i>Input</i> Variables	6 - 6
Incorporating the Design	6 - 7
Running the Program	6 - 8
Modifying the Part	6 - 8
Applying Conditionals	6 - 8
<i>Instantiating</i> to a Family Table	6 - 10
Reading Values from a File	6 - 11
Where to go from here?	6 - 11
Layers	6 - 12
Creating The Model	6 - 12
Using Layers	6 - 14
Creating Layers	6 - 15
Adding Items to a Layer (with <i>Include</i>)	6 - 15
Moving Items between Layers (with <i>Cut / Copy / Paste</i>)	6 - 16
Adding Items to a Layer (with <i>Rules</i>)	6 - 17
Controlling Layer Display (with <i>Hide / Unhide</i>)	6 - 18
Feature Selection using Layers	6 - 19
Default Layer Setup	6 - 19
Questions for Review	6 - 22
Project Exercises	6 - 23

Lesson 7 : Advanced Drawing Functions

Synopsis	7 - 1
Overview	7 - 1
Drawing Setup Files	7 - 1
Detailing: Dimension Symbols and Draft Entities	7 - 4
Drawing Dimensions	7 - 5
Standard Dimensions using <i>On Entity</i>	7 - 6
Selecting References for Dimensions	7 - 7
Creating Draft Entities	7 - 8
Dimensions of Draft Entities	7 - 9
Relating Entities to Views	7 - 10
More Drafting Tools	7 - 11
Moving and Trimming Draft Entities	7 - 11

Changing the Line Style	7 - 12
Adding a Note and Hatch Pattern	7 - 12
Drawing Formats and Tables	7 - 13
Creating a Format	7 - 13
Creating a Table	7 - 14
Using Drawing Parameters	7 - 15
System Parameters	7 - 15
Model Parameters	7 - 16
Using a Drawing Format	7 - 17
Repeat Regions	7 - 19
A Simple Repeat Region	7 - 19
Repeat Region Filters	7 - 21
A 2D Repeat Region	7 - 22
Displaying Symbolic Dimensions	7 - 25
Multi-Model Drawings	7 - 26
Creating the Drawing	7 - 27
Setting the Active Model	7 - 27
Multi-Sheet Drawings	7 - 29
Adding a Drawing Sheet	7 - 29
Creating a Drawing Template	7 - 32
Summary	7 - 37
Questions for Review	7 - 37
Project Exercises	7 - 39

Lesson 8 : Advanced Assembly

Synopsis	8 - 1
Overview	8 - 1
Creating the Assembly	8 - 1
The Assembly Plan	8 - 2
The Side Frames	8 - 3
Retrieving a Family Instance Component	8 - 4
Component Patterns	8 - 5
Merging Components	8 - 5
Creating a Part using <i>Mirror</i>	8 - 6
Examining Dependencies	8 - 8
The Side Frame Subassembly	8 - 8
Repeating Components	8 - 9
Creating a Skeleton Feature	8 - 11
Component Interfaces	8 - 12
Creating a Component Interface in Part Mode	8 - 13
Creating a Component Interface in Assembly Mode	8 - 15
The Front Wheel Subassembly	8 - 16
Using a <i>Reference Pattern</i>	8 - 17
The Side Wheel Subassembly	8 - 18
The Frame Subassembly	8 - 19
The Main Assembly	8 - 20

Adding the Suspension Arms	8 - 21
Adding the Side Wheel Subassembly	8 - 22
Adding the Front Wheel Subassembly and Parts	8 - 22
Adding the Cargo Bin	8 - 23
Creating a Part in Assembly Mode	8 - 24
Setting a Display State	8 - 25
Assembling the Springs	8 - 26
Defining a Flexible Component	8 - 26
Using Pro/PROGRAM	8 - 28
Assembling Components using Automatic Placement	8 - 29
Assembling Components using <i>Replace</i>	8 - 31
Performing an Interference Check	8 - 32
Assembly Drawings	8 - 32
Creating a Drawing BOM	8 - 33
Creating the BOM Table	8 - 33
Creating the Repeat Region	8 - 34
Creating the BOM	8 - 35
Adding Balloons	8 - 36
Conclusion	8 - 37
Questions for Review	8 - 38
Some Final Project Exercises	8 - 39