

MatrixGold CAD Improvers

Short Course

Outline and Objectives

Course Outline

This course is designed for those students who have completed the Level 1 Artisan curriculum, but find themselves wanting more fundamental modelling skills and problem-solving strategies. You could almost consider it to be a level 2 Artisan course.

The emphasis in this course is on consolidating existing MatrixGold knowledge and building upon it to form an essential solid and NURBS surface modelling strategy to give students greater confidence in building their own original designs.

Although the class follows a clearly defined structure there will be scope for trainees to discuss individual work projects of their own.



Structure

This course begins by reviewing the interface and essential commands as students have learned them from MatrixGold Academy's online training. We will then explore NURBS solid modelling commands with greater depth, seeing how they fit into an efficient solid modelling strategy revolving around a few key commands.



Throughout these exercises, we will discuss important tolerance considerations for 3D printing models to use in precious metals casting.

We will also discuss specific mesh controls for exporting STL files for rapid prototyping (such as 3D printing). Creating 2D line drawings from a 3D model and printing methods will also be considered.

The length of this course will vary depending on style of delivery. For an online course, this class lasts for 6 sessions of 3 hours each. In a classroom-based course, this would be 3 full days of 6 hours each (usually from 10-5 with a lunch break).

Prerequisites

Trainees should have already completed most or all of MatrixGold Academy's Level 1 Artisan curriculum, and have practice the software for at least 4 weeks on their own. But this can depend on previous and general CAD experience.

Curriculum

Full Syllabus Summary

1. Reviewing Details of the MatrixGold Interface
 - Creating and controlling objects
 - Osnaps
 - The Project Snap
 - The Rhino menu tabs
 - Incremental Saving vs the Project Manager
2. Review curve construction for making closed shapes.
3. Curve Controls
 - Using the Background Bitmap
 - Controlling the Interpolated Curve
 - Trace a shape with precision size and freeform curves (a mask?)
 - Use Rebuild
4. Osnap review
5. Use Move, rotate, scale, mirror, duplicate, fillet (little man)
 - Precision Positioning
 - The Move, Rotate, Scale, Mirror, Duplicate commands
 - How Gumball fits in
 - Fillet Curve
 - Use offset
6. Project snap
7. Custom Bezel Earring with drops
 - Revolve open vs closed shapes
 - Revolve vs. Bezel Builder
 - Gumball and drag copy review
 - Earring tolerances
 - Building wire constructions with Pipe
8. Making a perfect claw set ring
 - Making a ring with dynamic sweep vs classic sweep
 - Swept setting w/ polar array
 - Ring tolerances
 - Dynamic commands vs. Classic commands
 - Classic Booleans vs Dynamic Booleans
9. Rendering Review
10. Parameters for exporting for 3D printing
11. Rail Revolve
 - Princess Claw setting



- Building a Princess Claw Setting without Dynamic Commands
- 12. Loft
 - Domes and cabochons
- 13. History in MatrixGold
 - Dynamic Parametric History
 - Rhino Direct Modelling History
 - Building a Rex Setting without Dynamic Commands
- 14. 2 Rail Sweep vs. 1 Rail Sweep
 - a. Applications of 2 Rail Sweep
 - b. Building a Pinched Tiffany Shank
- 15. An Essential Solid CAD Modelling Strategy
 - c. The 6 Key Commands, and how they fit together
 - d. Breaking down shapes into simpler commands
- 16. Building a shared claw eternity ring/pendant
- 17. Custom crossover ring shapes
 - Fitted side bands
- 18. Universal Deformation Tools (UDT) and their application
 - Flow along curve
 - bangle tolerances
 - Flow Along Tolerance Ring with Rhino History
- 19. Surface Modelling
 - Building objects face by face
 - Building your own gemstone
 - Building a faceted ring
- 20. Using the Gem on Curve Command
 - a. Making Chains with Object on Curve
 - Pendant tolerances
- 21. Bombe ring
 - hollowing
 - pave commands

