



EMPOWER[ED] ACADEMY

CAD + CNC Fundamentals Certification Course and Lesson Guides

This is a summary of the 16 sessions of the EMPOWER[ED] ACADEMY CAD + CNC Fundamentals Certification Course and Lesson Guides, by Simply Technologies Group.

Session 1

CNC FUNDAMENTALS

Overview

- History of the CNC Industry
- Anatomy of the CNC
- Preventative Maintenance
- Principles of CNC

Session 2

THE VECTRIC ENVIRONMENT

Overview

- VCave Desktop, VCave Pro and Aspire: Similarities and Differences
- Setting Up Vectric Software
 - Material Management
 - Machine Configuration
 - Tool Database Overview
- Tool and Tool Group Creation
 - Feeds and Speeds
 - Cloud Tool Database

Session 3

CAD BASICS

Overview

Anatomy of the Vector

State of a Vector

Node Editing

Node Cleanup

Session 4

JOB SET UP

Overview

Material Set Up

X, Y, and Z Origins

Modelling Resolution

Material Appearance

Creating a New Job

Advanced Material Setup

Session 5

CLOSED VECTORS

Overview

Definition of Closed Vector

Create Vectors Menu

Anchor Points

Creating and Editing Common Closed Vectors

Radius vs. Diameter

Session 6

OPEN VECTORS

Overview

- Definition of Open Vector
- Create Vectors Menu
- Creating and Editing a Variety of Open Vectors
- Closing Open Vectors

Session 7

CREATING AND EDITING TEXT

Overview

- Creating and Editing Text
- Font Selection for CNC
- Kerning Text
- Wrapping and Curving Text
- Distorting Objects
- Text-to-Vector Conversion

Session 8

BITMAP TO VECTOR CONVERSION

Overview

- Vector vs. Raster Images
- Finding Raster Images
- Importing Bitmaps
- Tracing Bitmaps
- Vector Cleanup
- Transforming Objects
- Editing Bitmaps

Session 9

VECTOR POSITIONING

Overview

Aligning to Material vs. Vector
Moving Objects
Rotating Objects
Utilizing Shortcut Keys

Session 10

SPECIALTY TOOLS

Overview

Sheets
Linear and Circular Arrays
Array Along Vectors
Offsetting
Nesting
Measuring Tape
Vector Validator
Vector Selector
Notes

Session 11

PROFILE TOOLPATH

Overview

Toolpath Tab
Profile Toolpath Functions and Applications
Cut Depths and Passes
Tool Selection and Tool Settings
Climb vs. Conventional Milling
Adding and Editing Tabs
Machining Strategies
Naming, Previewing, Evaluating, and Editing Your Toolpaths

Session 12

POCKET TOOLPATH

Overview

Pocket Toolpath Functions and Applications
Tool Selection and Tool Setting
Cut Depths and Passes
Offset vs. Raster Machining Strategies
Pocket Allowance
Clearance and Finishing Toolpaths
Previewing, Evaluating, and Editing Your Toolpaths

Session 13

VCARVE / ENGRAVING TOOLPATH

Overview

VCarve Toolpath Functions and Applications
Tool Selection and Tool Setting
Flat Depths
Offset Vectors
Clearance and Finishing Toolpaths
Previewing, Evaluating, and Editing Your Toolpaths

Session 14

IMPORTING & MACHINING 3D MODELS

Overview

Vectric 3D Modelling Capabilities
3D Clipart File Types
Moving, Scaling and Adjusting a 3D Model
Combining 3D Models
Roughing and Finishing 3D Toolpaths
Previewing, Evaluating, and Editing Your Toolpaths

Session 15

SAVING TOOLPATHS

Overview

- Job Sheets
- Keep-Out Zones
- Saving Toolpath Menu
- Machine and Post Processor Selection
- Exporting Toolpaths to Machine

Session 16

MACHINE OPERATION

Overview

- Pre-Operation Safety Checks
- Powering On CNC Machine
- Homing the Machine
- Operating the Controller
- Loading Material and Home-Down
- Loading Toolpath Files
- Handling Pauses, Stops, and Emergencies
- Machine Maintenance

