



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. Available worldwide on September 1, 2025.

Session 0

COURSE INTRODUCTION

Overview

Objective 1: To provide the instructor with the necessary skills to effectively teach quantitative CAD/CAM/CNC skills to students.

Objective 2: To provide the school board administration with consistency in the skills being taught from school to school within their jurisdiction.

Objective 3: To provide a measurable standard that will help the administration to insure that ALL teachers involved have the necessary skills and competency to teach these skills to their students.

Objective 4: To provide instruction for the safe operation of the CNC equipment to insure that we have created the safest possible environment for students to learn.

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

VCarve Desktop, VCarve Pro and Aspire: Similarities and Differences
Customizing Your Vectric Software
Adding Your Machine to Vectric Software
Tool Database Overview

Session 3

CAD BASICS

Overview

Anatomy of the Vector
Node Editing

Session 4

JOB SET UP

Overview

Material Set Up
X,Y,Z Origins
Safe Z Height

Session 5

CLOSED VECTORS

Overview

Creating and Editing a Variety of Closed Vectors Including Circles,
Rectangles, Polygons, Ellipses, etc

Session 6

OPEN VECTORS

Overview

Creating and Editing a Variety of Open Vectors Including Polylines, Arcs, etc.

Session 7

CREATING AND EDITING TEXT

Overview

Creating and Editing Text, Including Wrapping and Curving Text,
Editing Text Spacing and more

Session 8

BITMAP TO VECTOR CONVERSION

Overview

Qualifying, Importing and Converting Bitmap Graphic Images Into Machinable Vectors

Session 9

VECTOR POSITIONING

Overview

Moving, Scaling, Mirroring and Aligning Vectors
Shortcut Keys

Session 10

EDITING VECTORS

Overview

Welding, Merging and Overlapping Vectors

Session 11

SPECIALTY TOOLS

Overview

Circular and Linear Arrays

Offsetting

Nesting

Session 12

PROFILE TOOLPATH

Overview

Profile Toolpath Functions and Applications

Tool Selection and Tool Setting

Previewing and Evaluating Your Toolpath

Session 13

POCKET TOOLPATH

Overview

Pocket Toolpath Functions and Applications

Tool Selection and Tool Setting

Previewing and Evaluating Your Toolpath

Session 14

VCARVE ENGRAVING TOOLPATH

Overview

VCarve Toolpath Functions and Applications

Tool Selection and Tool Setting

Previewing and Evaluating Your Toolpath

Session 15

IMPORTING CLIPART & MACHINING 3D MODELS

Overview

File Types

Moving, Scaling and Adjusting a 3D Model

Merging 3D Models

Splitting 3D Models

Creating 3D Boundaries

Tool Selection

Tool Settings

Understanding Correct Post Processor Selection

File Management

Session 16

CNC MACHINE OPERATION

Overview

Machine Care and Maintenance

Surfacing your Spoil Board

Changing Tools

What to Watch For



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