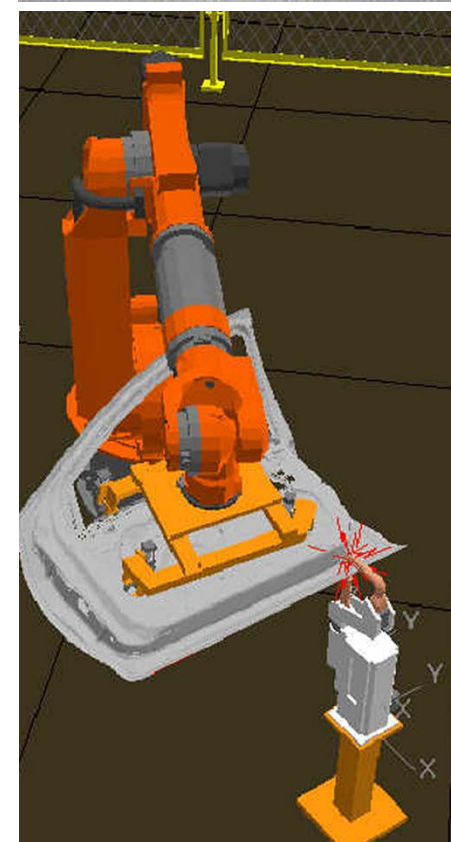




Distance Learning and Simulation
Advantage for CNC Students

Reaching out Beyond the
Classroom and Lab

David "Otter" Ott Lt Col Ret.
otter@immerse2learn.com
515.571.9963



Strategic Partners



Support Haas Factory Outlet online training and website portals.



Haas Technical Education Center website and Partner Portal built on Immerse2learn.com software technology.



MastercamU built on Immerse2learn.com Learning Content Management System (LCMS). Immerse2learn.com sells and supports MastercamU online learning and certification.



Delcam University built on Immerse2learn.com Learning Content Management System (LCMS).



Fanuc Mill and Lathe curriculum and virtual CNC emulators.



Implementing NIMS South Africa International Testing system.



National Tooling and Machining Association.
Aptitude testing system and Advanced CNC training.

Over 300 Schools in 2013

- Hawkeye Community College
- Southwestern Illinois College
- Kirkwood Community College
- Plymouth High School
- Calhoun Community College
- Ottawa Intermediate Schools
- Orchard View Technical School
- Saint Clair RESA
- Lenoir Community College
- Randolph Community College
- Guilford Technical College
- BJ Skelton Career Center
- Purdue University
- Rensselaer Polytechnic Institute
- Gateway Community College KY
- Western Iowa Technical Community College
- Michigan Department of Education
- Central Community College
- Pennsylvania College of Technology
- Tennessee Technology Centers
- Lone Star Colleges
- Hennepin Community College
- Dunwoody College
- Saint Paul Community
- Rowan Cabbarus Community College
- Focus Hope
- Vincennes University
- Knox Career Center
- Southern Indiana University

Learning Through Simulation

- Simulation boosts learning rates dramatically
- Study by the National Training Labs (NTL) Institute for Applied Behavior Sciences in Alexandria, VA
 - Students retain 5% of what they hear in lectures
 - 10% of what they read
 - 20% of what they see and hear in audio/visual presentations
 - **Add “practice by doing” and “immediate use”, two learning techniques available in simulations, and retention rates jump to 75%**
- Students learning via simulation based training become more proficient more quickly

Simulation in the Schools, in the Workplace and at Home

- Breaks down the barriers between what we learn and what we do - We practice virtual hands on while learning
- Bring the worlds of industry and education closer together – reaching out through online learning and simulation
- Highly interactive simulations can create massive increases in productivity and knowledge transfer to students and employees
- Instructors move to a higher role of coaching and diagnosing
- Errors and mistakes cause no damage or safety hazards in the virtual world

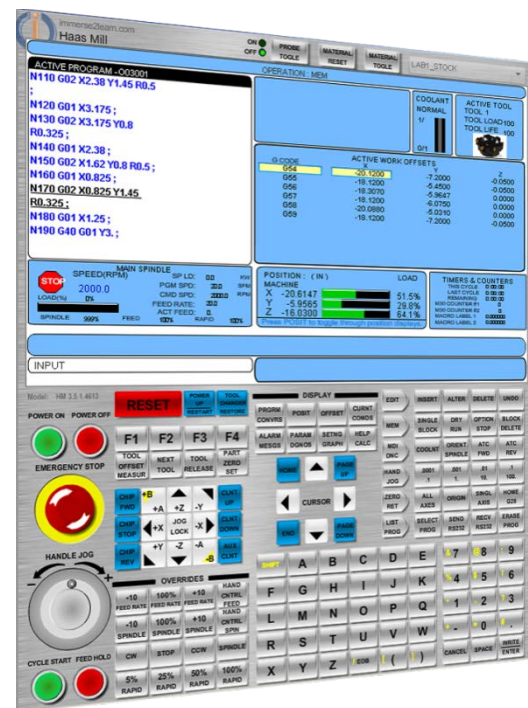
Computer Simulations in Distance Education

- Computer simulations are essentially representations of real-life systems modeled for virtual exploration
- Simulations can provide students with the means to explore environments that would otherwise be prohibitive due to factors of cost, safety and proximity
- Because **simulations allow exploration and experimentation** they are being more widely used in online learning providing instructors and students an opportunity for **combining the direct virtual experience with the learning environment**
- **Computer simulations make experience possible in a distance learning setting**

Paper by Les M. Lunce

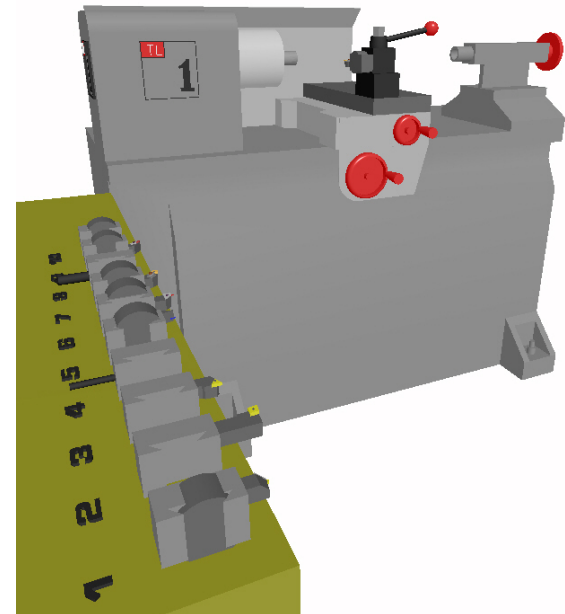
Opportunities for High Schools and Technical Colleges Combining Simulation and Distance Learning

- Options for students enrolled through high school post-secondary agreements
- Mini-courses/workshops with introductory modules BEFORE starting a high school or CC program. Market to parents and students.
- Online Courses to be added to existing courses in Program lineups



Primary Solution Components:

- *Virtual Training Environment (VTE)*
- *Skills Learning Modules*
- *Assessment*
- *Reports*

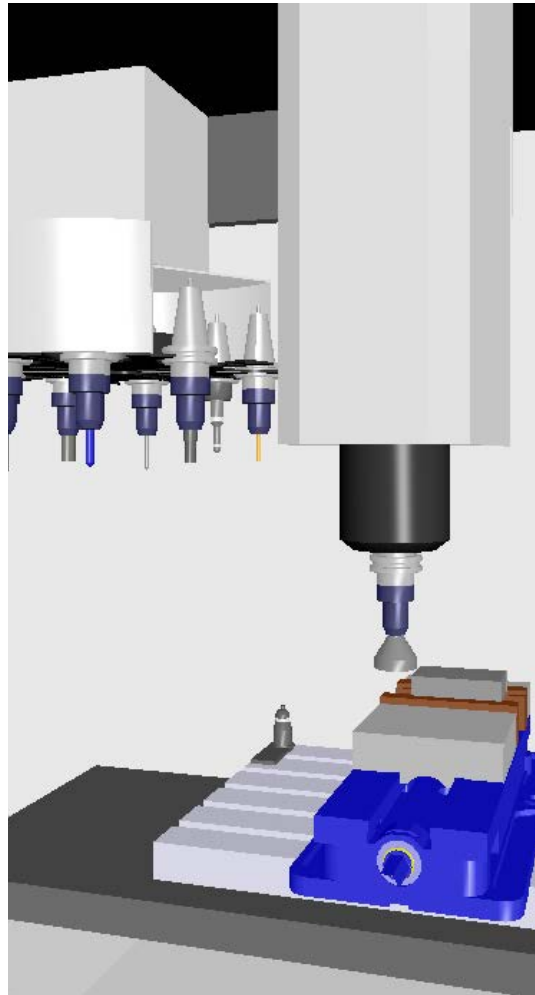


Reality at Your PC- Anywhere!

“It is like being at the actual machine and control.” -Instructor, Easely, SC

Real-world characteristics accurately mimic actual manufacturing systems:

- Geometric Models
- Motion
- Program Languages
- Control Logics
- Process Times
- Control Alarms
- Control Types:
CNC, Robotic, etc.
- Material Removal



COMMANDS (MEM) 003001 CMD MACHINE coordinates press ^V

CURRENT PROGRAM
N20 G00 G17 G40 G80 G90 ;
N30 T1 M06 (2.0 FACE MILL) ;
N40 G54 G90 G00 X-1.25 Y3.5 ;
N50 S2000 M03 ;
N60 G43 H01 G00 Z0.1 M08 ;
N70 G00 X-1.25 Y2.7 ;
N80 G01 Z-0.15 F3 ;
N90 G41 G01 Y1.45 D01 ;
N100 G01 X1.62 F2.0 ;
N110 G02 X2.38 Y1.45 R0.5 ;
N120 G01 X3.175 ;
N130 G02 X3.175 Y0.8 R0.325 ;
N140 G01 X2.38 ;

CMD MACHINE coordinates
X -18.5860
Y -7.5940
Z -9.6152

SP LLOAD: 0%
X LLOAD: 0%
Y LLOAD: 0%
Z LLOAD: 0%

Surf Spd 0 fpm Chip Load 0.0000

FD 3.0000
SP 2000

TL WEAR: 0.0000 In
TL DIA.: 2.000 In
Z LENGTH: -9.415 In
FLUTES: 1

FEED TIME: 0:00:00
TOOL USAGE: 0
TOOL LIFE: 100%

2000RPM

1

RESET POWER OFF POWER ON

F1 F2 F3 F4

EMERGENCY STOP

HANDLE JOG

OVERRIDES

FEED RATE 100% FEED RATE 100% FEED RATE 100%

SPINDLE 100% SPINDLE 100% SPINDLE 100%

CW STOP CCW SPINDLE

5% RAPID 25% RAPID 50% RAPID 100% RAPID

PRGM CONVRS POSIT OFFSET CURRNT COMDS

ALARM MESSAGES PARAM DGNOS SETNG GRAPH HELP CALC

HOME CURSOR

END

EDIT INSERT ALTER DELETE UNDO

MEM SINGLE BLOCK DRY RUN OPTION STOP BLOCK DELETE

MDI DNC COOLANT ORIENT SPINDLE ATC FWD ATC REV

HAND JOG .0001 .001 .01 .1 .1 .100.

ZERO RET ALL AXES ORIGIN SINGL AXIS HOME G28

LIST PROG SELECT SEND REC V RS232 ERASE PROG

7 8 9

F G H I J K 4 5 6

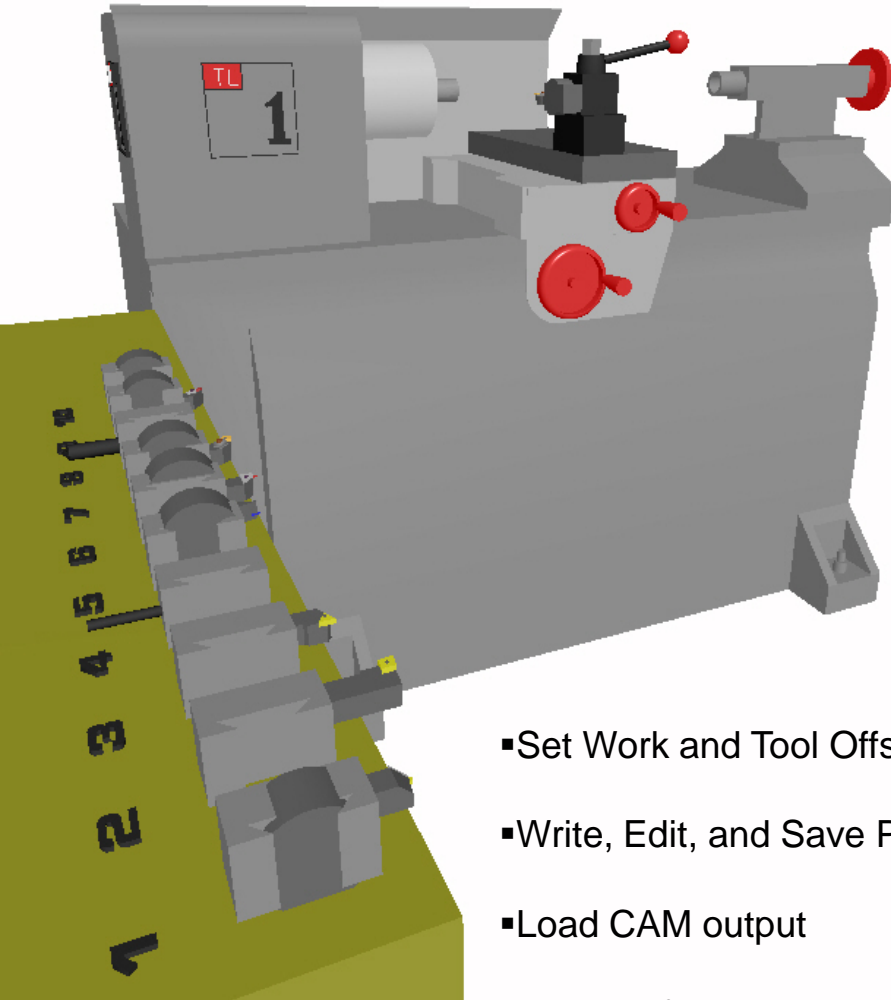
L M N O P Q 1 2 3

R S T U V W - 0 .

X Y Z EOB () CANCEL SPACE WRITE ENTER

Virtual Training Environment (VTE)

True 3D simulation and emulated controls provide a real-world learning experience.



- Set Work and Tool Offsets
- Write, Edit, and Save Programs
- Load CAM output
- Library of Machines

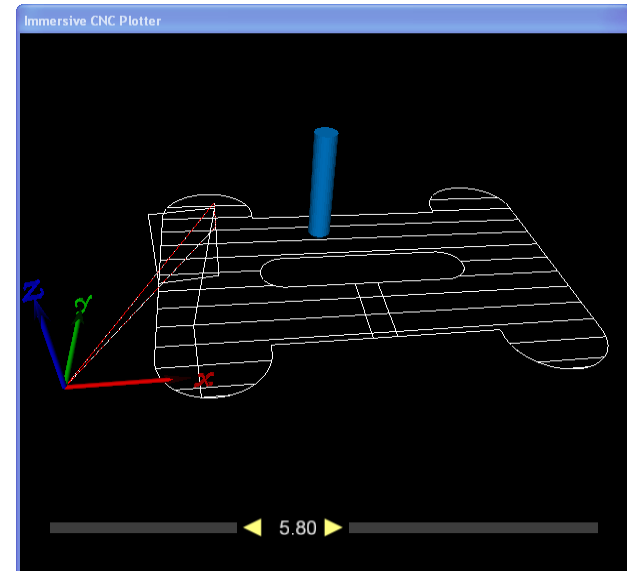
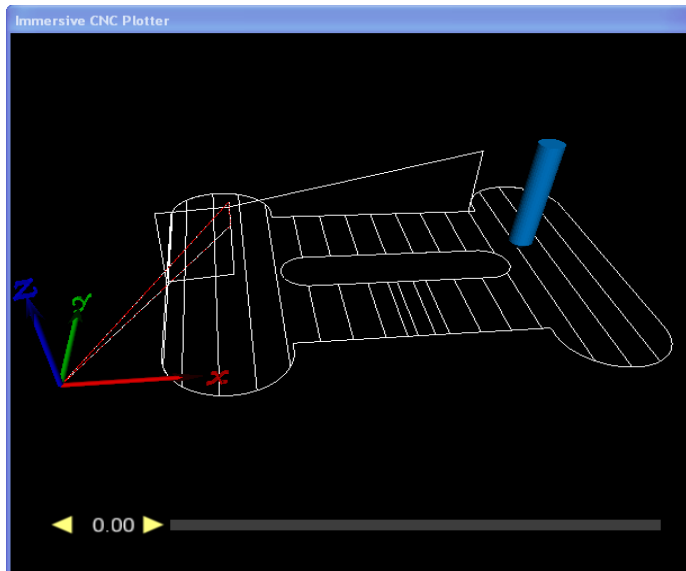
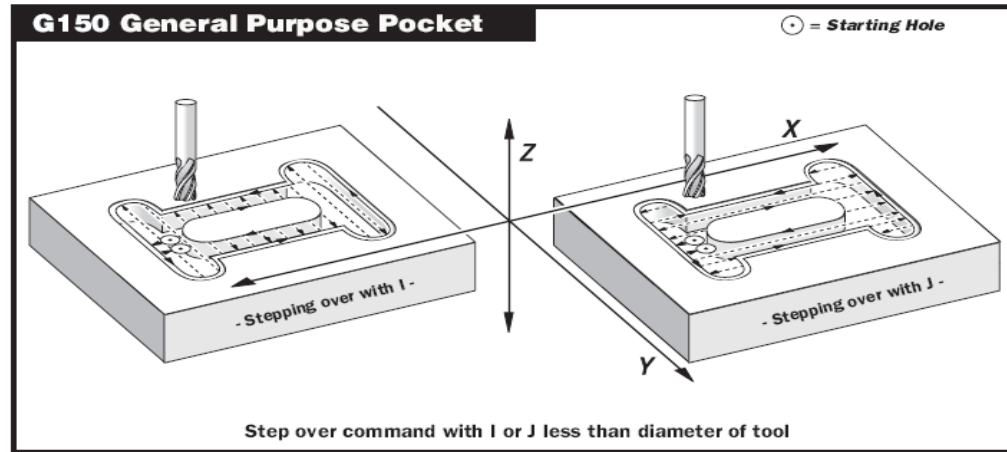
A screenshot of the Haas VTE control interface. The interface is divided into several sections:

- Top Bar:** Includes the Immerse2Learn logo, machine name 'Haas Lathe', and material selection 'SL20_STOCK1'.
- OPERATION: MEM:** Displays the active program code: 'ACTIVE PROGRAM -004000', 'N030 G54 G50 S3000;', 'N040 G97 S950 M03;', 'N050 G00 X2.1 Z.1;', 'N060 G96 S750;', 'N070 G01 Z0.0000 F.0035;', 'N080 G01 X-.03;', 'N090 G00 Z.1 (Rapid away from the part);', and 'N095 G00 X2.1 (Rapid in the "X" axis to the top of the work piece.);'. It also shows active codes: 'G00 RAPID MOTION', 'G96 FEED PER REVOLUTION', 'G01 CUTTER COMP CANCEL', 'G03 CYCLE CANCEL', and 'G54 WORK OFFSET #54'. Coolant status is 'NORMAL' with a '1/1' indicator.
- ACTIVE WORK OFFSETS:** A table showing offsets for G CODE, X AXIS, and Z AXIS. G54 has X and Z offsets of 0.0000. G55, G56, G57, G58, and G116 have X offsets of 0.0000 and Z offsets of 0.0000.
- MACHINE STATUS:** Shows 'SPEED(RPM) 750.0', 'LOADY (%) 0%', 'SPINDLE 85%', and 'FEED 100%'. It also displays 'POSITION: (IN) MACHINE X -12.0482, Z -23.0010' and 'LOAD 30.1%'.
- TIMERS & COUNTERS:** Shows 'THIS CYCLE 0:00:00', 'LAST CYCLE 0:00:00', and 'REMAINING 0:00:00'. It also shows 'M30 COUNTER #1 0', 'M30 COUNTER #2 0', 'MACRO LABEL 1 0', and 'MACRO LABEL 2 000000'.
- CONTROL PANEL:** Features a 'FEED HOLD' section with an 'INPUT' field. Below it is a 'RESET' button and 'POWER ON/OFF' buttons. A large red 'EMERGENCY STOP' button is prominent. The panel includes a 'HANDLE JOG' section with a rotary dial and 'CHIP FWD/STOP/REV' buttons. The 'OVERRIDES' section has 'FEED RATE' and 'SPINDLE' controls with percentage sliders. The bottom section contains a 'CYCLE START' button and a 'FEED HOLD' button, followed by a grid of alphanumeric keys (A-Z, EOB, CANCEL, SPACE, WRITE ENTER) and function keys like 'PRGM CONVR', 'POSIT', 'OFFSET', 'CURNT COMDS', 'ALARM MSGS', 'PARAM DGNOS', 'SETNG GRAPH', 'HELP CALC', 'MEM', 'MDI DNC', 'HAND JOG', 'ZERO RET', 'LIST PROG', 'EDIT', 'INSERT', 'ALTER', 'DELETE', 'UNDO', 'SINGLE BLOCK', 'DRY RUN', 'OPTION', 'BLOCK DELETE', 'COOLANT', 'JOG SPINDLE', 'TURRET FWD', 'TURRET REV', 'AUTO ALL AXES', 'ORIGIN', 'ZERO SINGL AXIS', 'HOME G28', 'SELECT PROG', 'SEND RS232', 'RECV RS232', 'ERASE PROG', 'SHIFT', and 'PAGE UP/DOWN'.

3D Plotter Included

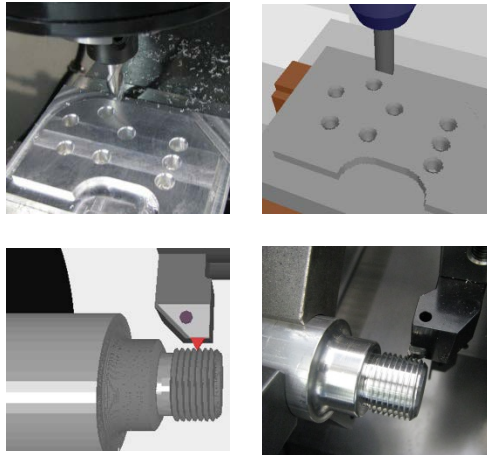
Quickly View Tool Center Line

G150 General Purpose Pocket Milling



Return on Investment

Unlimited access to train and rehearse in a virtual environment enables students to develop greater confidence and proficiency prior to performing actual procedures and operating actual equipment.



- Overcome barriers: student equipment ratio, location, etc.
- Increase Training Contact time with equipment
- Minimize risk of damaging equipment or incurring injuries

Skills Learning Modules

- Step-by-step instruction
- Lessons aligned to skills assessment
- Building-block” exercises prepare student for actual machine time

➤ Sample Skills Modules:

- Introduction
- Safety for Machining
- Shop Math Level I
- Shop Math Level II
- Blueprint Reading w/GD&T
- Precision Measurement Devices
- Machinist Calc Pro
- Mill Control Interface
- Mill Setup
- Mill Programming
- Lathe Control Interface
- Lathe Setup
- Lathe Programming
- Mastercam Mill
- Mastercam Lathe
- Advanced CNC, Dies and Molds

Absolute Worksheet

Beat The Clock: 00:01:25

Game Status: YOU WIN!

Legend:

- Zero Point
- Aux Coordinate
- Correct Move
- Incorrect Move
- Correct Rapid
- Incorrect Rapid

Point X Y Absolute X Y

A	5.	2.	Draw		
B	2.	4.	Draw		
C	-2.	-1.	Draw		
D	1.	-3.	Draw		
E	4.	-3.	Draw		
F	5.	0.	Draw		

Draw All

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Incremental Programming Method

U and W are used to program *incremental* motion

U specifies incremental motion along the X-axis

W specifies incremental motion along the Z-axis

After every move the zero point is reset to the coordinate of the last move.

Positive Direction

Negative Direction

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Canceling CDC: G40 Command

Cutter Diameter Compensation (CDC) is cancelled with the G40 command and must be cancelled with linear motion while moving away from the part.

Just as it was turned ON with a "Take move", it must be turned OFF with a "Take move" greater than or equal to the tool radius stored in the CDC control.

Canceling CDC moves the tool from a fully compensated position to an uncompensated position.

Actual Position Compensated

Actual Tool Path

End Position Uncompensated

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Rough Turning G71

G71 Rough Turn Cycle

G71 Rough Turn Cycle is used to rough bar stock into a finished shape. The tool path is defined by the roughing and finishing phases.

Example Program:

```

G71 P10 Q20 U0.01 W0.005 D0.05 F0.1
P10 Q20 Specifies to read blocks N10 thru N20
U0.01 Leaves 0.01 stock on all diameters
W0.005 Leaves 0.005 stock on all faces
D0.05 Specifies a 0.05 depth of cut per pass
F0.1 Specifies a feedrate of 0.1 while rough turning
    
```

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Analog Dial Caliper Practice

Status: Press START to begin. Beat the clock and don't strike out!

Unit = Inch

Input measurements for 3 different object

Beat The Clock: 00:00:24 OF 00:03:00

3 Strikes - You're Out!

Measure the A dimension

Print Views: BOTTOM, FRONT, RIGHT SIDE

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G83 Peck Drill Cycle with I, J, K Introduction

The G83 Peck Drilling Command uses the Q address for constant drill pecking increments. In addition, I, J, K address may be used to define the G83 peck increments to be peck drilled. The I, J, K method is used when drilling to a depth that is greater than the tool diameter.

Procedure Steps:

- Initial Plane
- Final Depth of Hole
- Rapid Plane
- Feed Rate (Drives Per Minute)
- Rapid Plane

Example: G83 Z1.5 F10 R0.1 I 0.1 J 0.1 K 4

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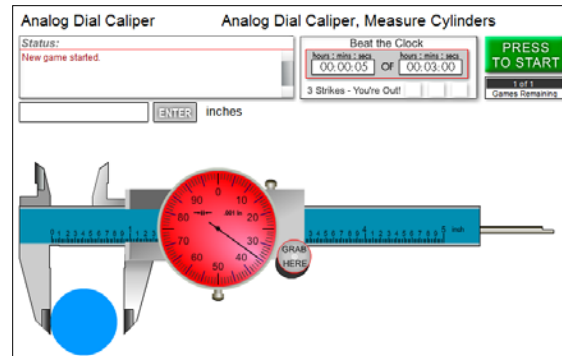
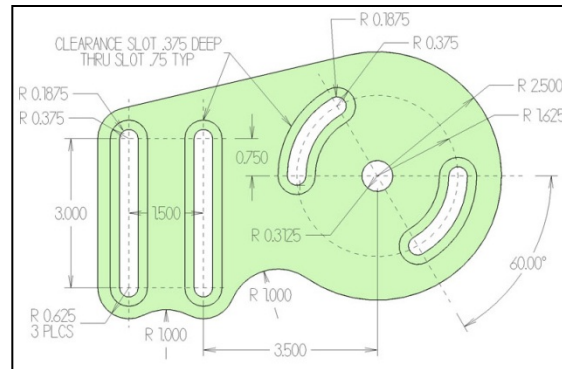
Industry Standard Content

Learn CNC for Haas or Fanuc

- Introduction
- Safety for Machining
- Shop Math Level I
- Shop Math Level II
- Blueprint Reading
- Precision Meas. Devices
- Machinist Calc Pro
- Feeds and Speeds
- Mill Control Interface
- Mill Setup
- Mill Programming
- Lathe Control Interface
- Lathe Setup
- Lathe Programming
- Mill Intuitive Programming

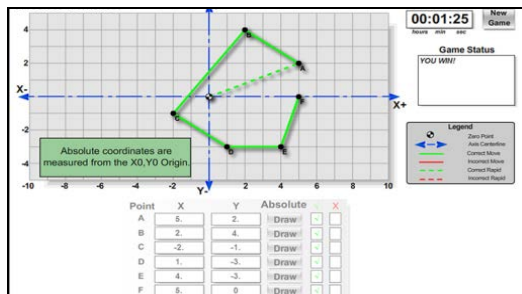
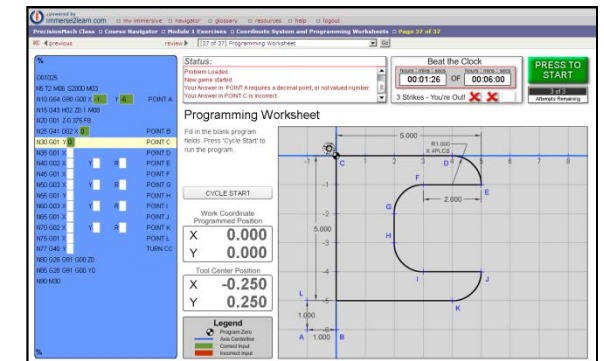
Learn CAM for Mastercam X6/7

- Principles of Machining
- Mill Design and Tool Path
- Lathe Design and Tool Path
- Advanced Mill Design and Tool paths
- Multi axis-
Curve Drill and Circle Mill



Learn Advanced Manufacturing

- CNC multi axis Mill and Drill
- Plastic Injection Molds
- Stamping Dies



Course Overview

Page Layout

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Home Administration Classes & Courses Course Tools Other Tools + Applications

You are here: Home » 2) Shop Safety Overview » Safety for Machining » During and After Machining » Safely Operating a Machine » Page 1 of 3

Module 3, Lesson 1, Page 1 of 3

<< Introduction [1] Machine Operation Go Next Page >>

Show Navigation >> A +

Machine Operation

Speeds and Feeds

Never rush the speeds and feeds on a machine.

Turn rapid speeds down and turn single block on when running a CNC program that is unproven. This gives the operator time to react if there is a problem.

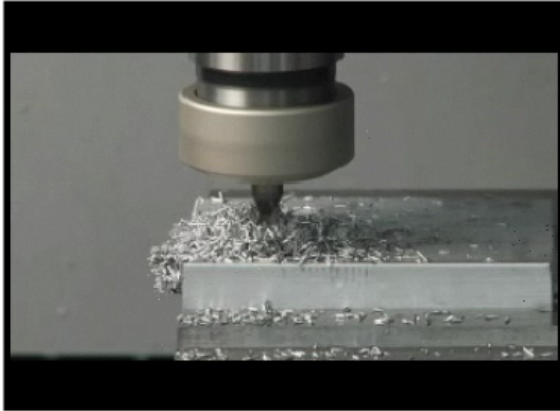
Always be very cautious when the machine is moving in the Z axis. Most CNC machines have a "Distance to Go" feature which will allow you to monitor the distance an axis has to travel. Watching the "Distance to Go" coordinate display will help prevent crashes.

Machine Sounds

A change in the sound a machine is making can be the first sign something has gone wrong. If the machine doesn't sound right stop it immediately and have the problem corrected.

Some sounds will be obvious and some will be subtle. A good operator will learn with experience how a machine should sound.

Safe and Responsible Operation of Machines



Safe and responsible machining requires understanding of:

- Feeds
- Speeds
- Sounds
- Vibration

www.immerse2lea

Interactive Exercises

•State-of-the-Art Exercise and Testing Environment

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immerse2learn.com

my immersive navigator glossary resources help logout

PrecisionMach Class Course Navigator Module 1 Exercises Coordinate System and Programming Worksheets Page 37 of 37

KK ◀ previous
review ▶ [37 of 37] Programming Worksheet
Go

```

%
O01025
N5 T2 M06 S2000 M03
N10 G54 G90 G00 X -1. Y -6. POINT A
N15 G43 H02 ZD.1 M08
N20 G01 Z-0.375 F8.
N25 G41 D02 X 0. POINT B
N30 G01 Y 0. POINT C
N35 G01 X POINT D
N40 G02 X Y R POINT E
N45 G01 X POINT F
N50 G03 X Y R POINT G
N55 G01 Y POINT H
N60 G03 X Y R POINT I
N65 G01 X POINT J
N70 G02 X Y R POINT K
N75 G01 X POINT L
N77 G40 Y TURN CC
%
          
```

Status:
 Problem Loaded.
 New game started.
 Your Answer in POINT A requires a decimal point, or not valued number.
 Your Answer in POINT C is incorrect.

hours : mins : secs
00:01:26

OF

hours : mins : secs
00:06:00

✖ ✖

3 Strikes - You're Out!

PRESS TO START

3 of 3
Attempts Remaining

Programming Worksheet

Fill in the blank program fields. Press 'Cycle Start' to run the program.

CYCLE START

Work Coordinate
Programmed Position

X 0.000

Y 0.000

Tool Center Position

X -0.250

Y 0.250

Legend

- Program Zero
- Axis Centerline
- Correct Input
- Incorrect Input

Interactive Exercises

Dynamic Visuals help to accelerate the learning process

- Track learner progress
- Step by step feedback
- Variable time, attempts, and minimum scores

Math Order of Operations

Status:
New game started.
Attempt recorded successfully. TIMEOUT!
You have 2 more attempt(s) left.

Beat the Clock
hours : mins : secs OF hours : mins : secs
00:00:11 OF 00:02:00
3 Strikes - You're Out!

PRESS TO START
2 of 3 Games Remaining

Math Order of Operation (Advanced)

Find the solution to the problem by selecting the proper operation for each step.
Press the Enter button to check your selections.
If your selection is correct, the next step is displayed until the solution is revealed.

= (4 + 12 ÷ 3) + 4 x 2	Parentheses
= (4 + 12 ÷ 3) + 4 x 2	Divide
= (4 + 4) + 4 x 2	---

ENTER

Analog Dial Caliper

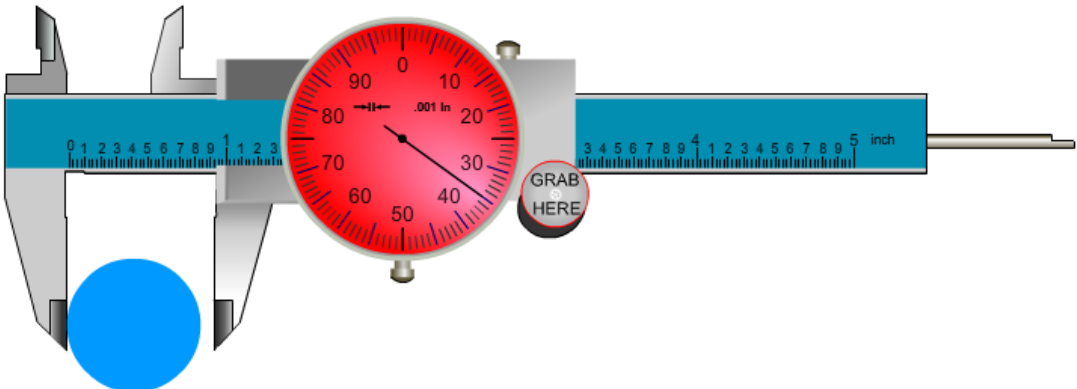
Analog Dial Caliper, Measure Cylinders

Status:
New game started.

Beat the Clock
hours : mins : secs OF hours : mins : secs
00:00:05 OF 00:03:00
3 Strikes - You're Out!

PRESS TO START
1 of 1 Games Remaining

ENTER inches



Course Overview

6) Video or graphical instruction and Virtual CNC interaction

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[Home](#) [Administration](#) [Classes & Courses](#) [Course Tools](#) [Other Tools](#) [+ Applications](#)

You are here: [Home](#) » [PrecisionMach](#) » [Basic Haas CNC Lathe Programming](#) » [Canned Cycles](#) » Canned Cycles » Page 6 of 9

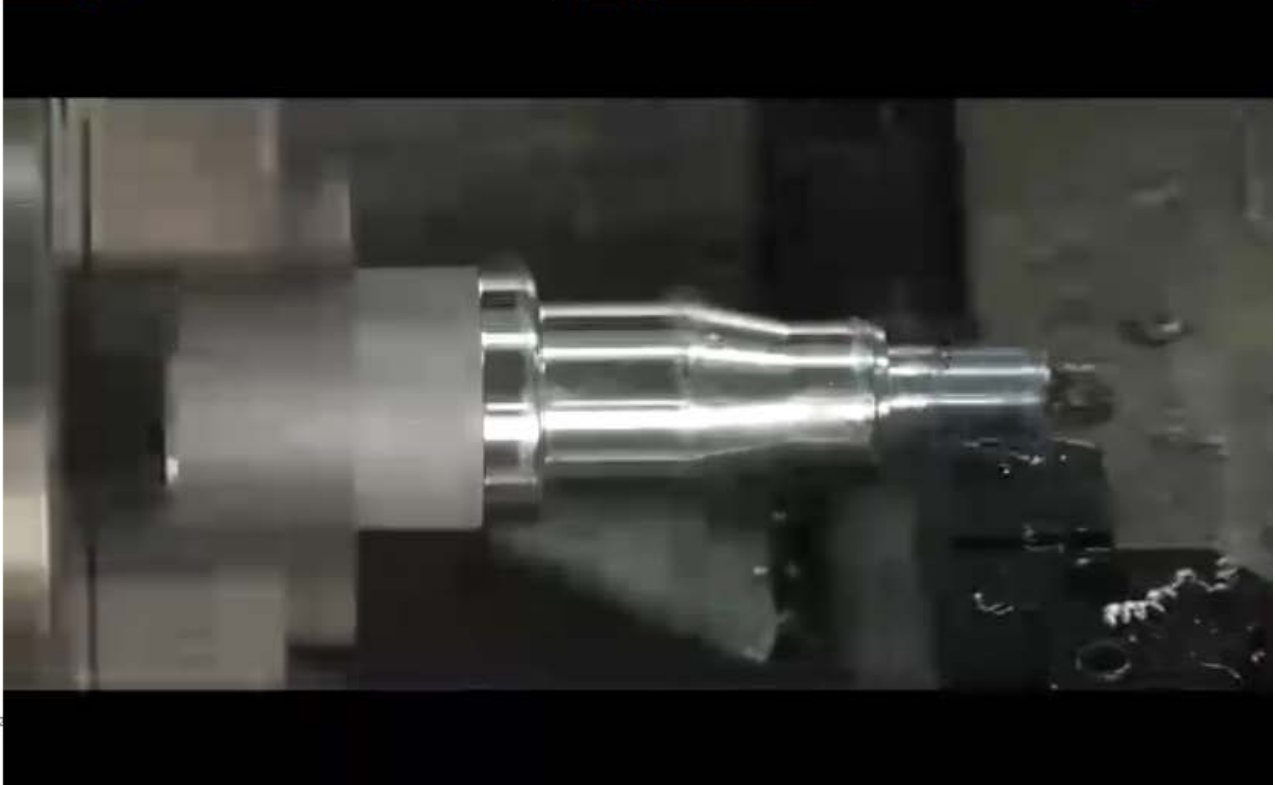
Module 5, Lesson 1, Page 6 of 9

[<< Previous](#) [\[6\] G76 Video](#) [Go](#) [Next Page >>](#) [Resources](#)

G76 Video

Basic Haas CNC Lathe Programming

- Program Structure
- Programming Methods
- Tool Motion and Tool Nose Radius (TNR) Compensation
- Circular Interpolation
- ✓ Canned Cycles
 - ✓ Canned Cycles
- Hole Manufacturing



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Course Overview

Calculated Industries Machinist Calc Pro with Virtual Calculator

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Home Administration Classes & Courses Course Tools Other Tools + Applications

You are here: Home » PrecisionMach » Machinist Calc Pro » Calculate Turning Speeds and Feeds » Turning Speeds and Feeds » Page 18 of 31

Module 3, Lesson 1, Page 18 of 31

<< Previous [18] Use the MCP Calculator to Calculate Cutting Feed Go Next Page >> Resources


Show Navigation >> - A +

Use the MCP Calculator to Calculate Cutting Feed Rate to the High Limit

This example demonstrates how to use the MCP calculator to calculate the Feed Rate to the high limit.

USE EMULATOR


+ Applications



Machinist Calc Pro

1. Enter the Feed Rate (IPM)
3 1 Feed Rate
2. Enter the Spindle Speed (RPM)
1 9 1 0 RPM
3. Calculate the Cutting Feed:
Cut Feed

Tool Manufacturer Cutting Data	
Component	Cylindrical Bar 4.0" DIA
Operation	OD Turning
Material	Aluminum
Cutting Speed/SFM	800 - 2000
IPM (f)	1.5 - 31.0

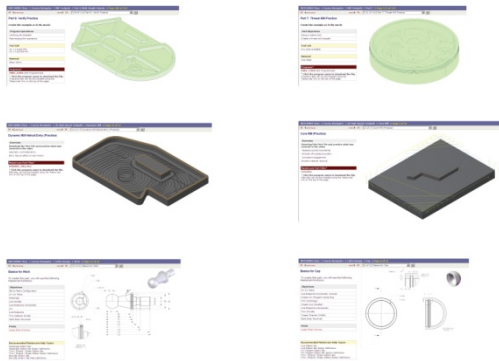


The calculator screen displays "CUT" and the result "0.0162". The units are indicated as ".REV" and "INCH".

Teaching Concept to Creation

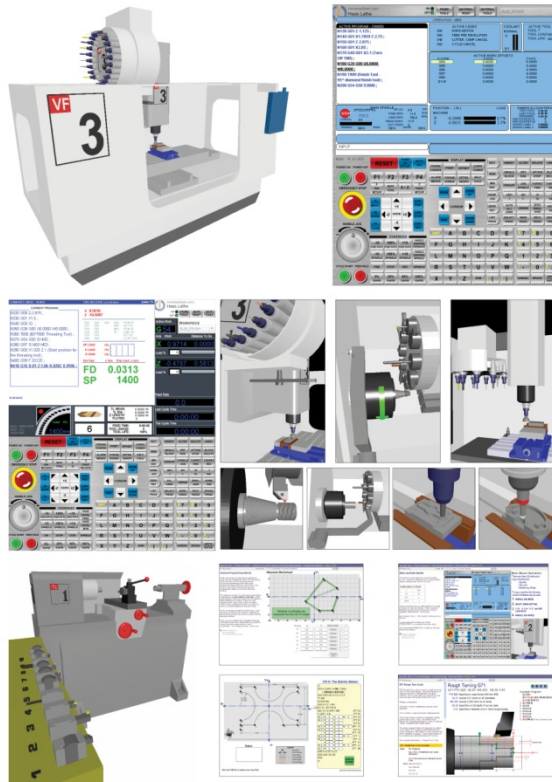
LearnCAM

Mastercam Training and Certification

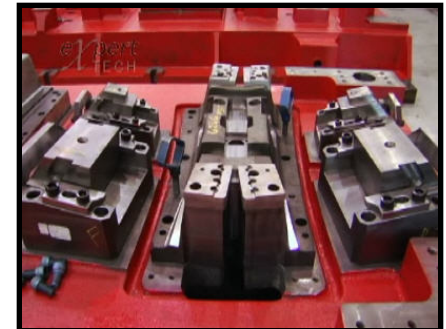


LearnCNC

Virtual CNC, Interactive Learning and Assessment

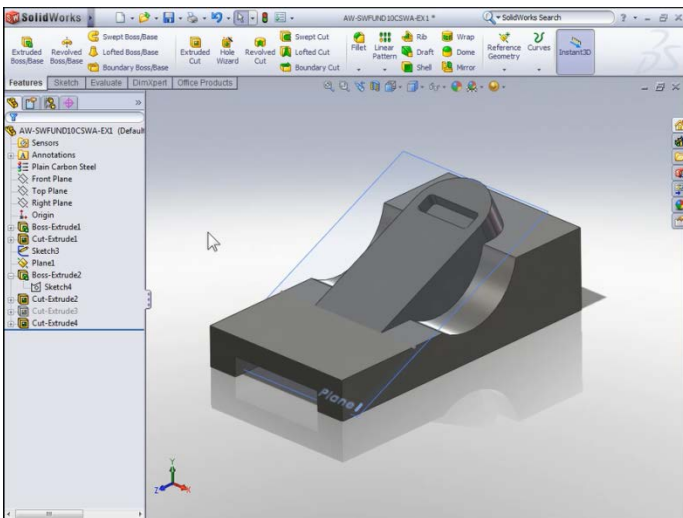
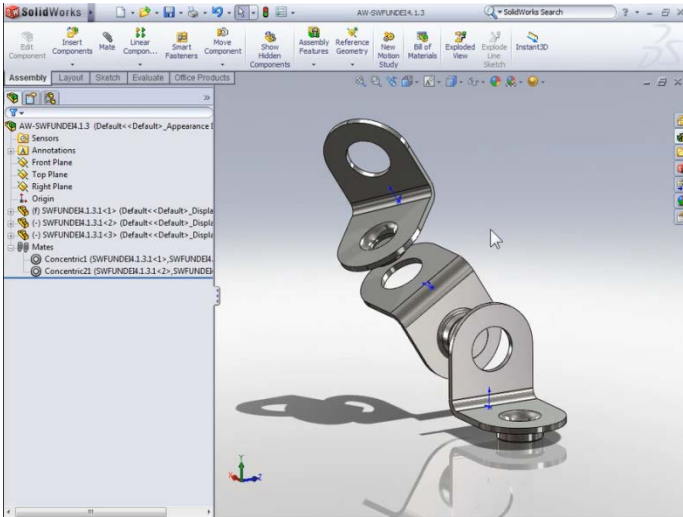


Advanced Manufacturing



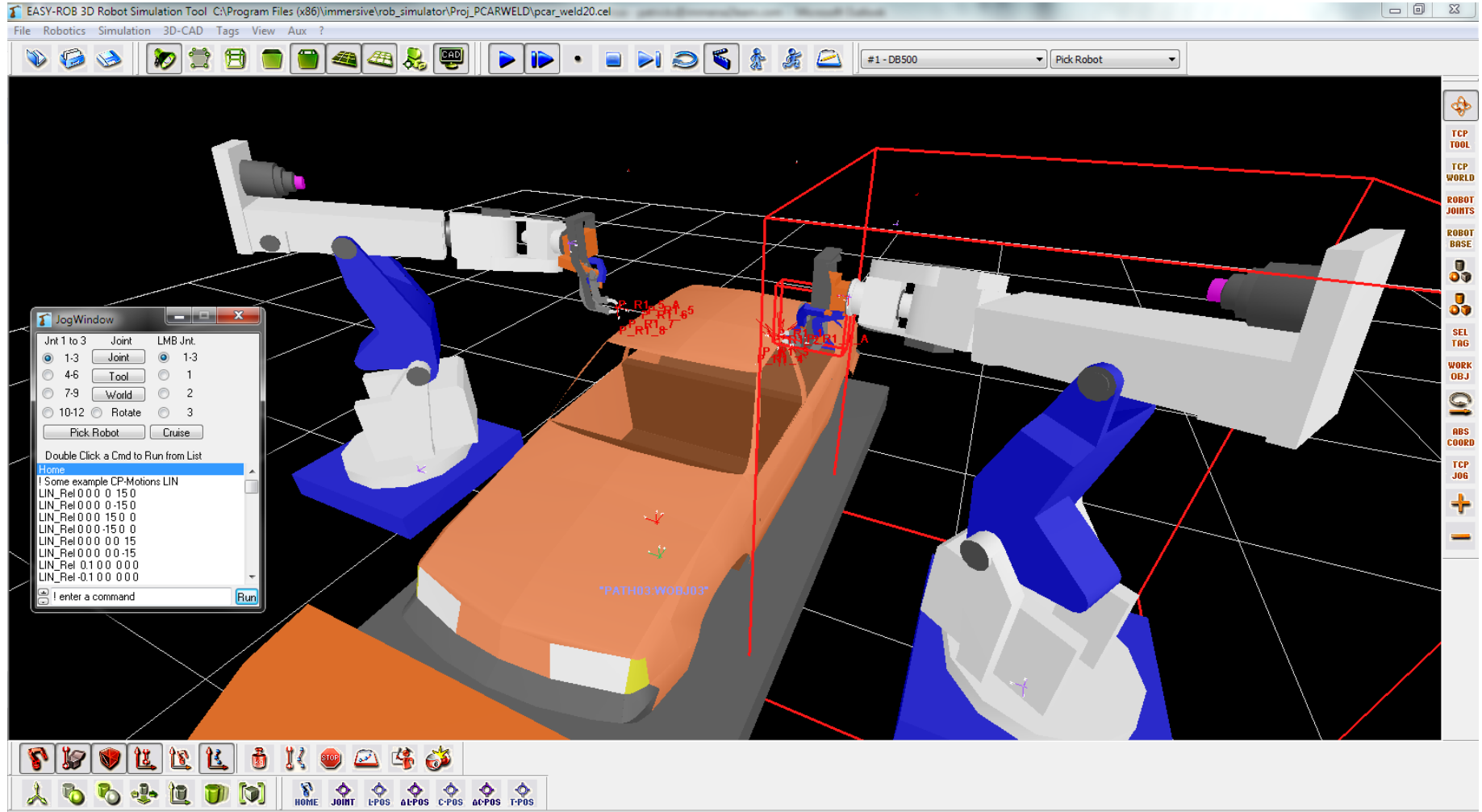
Other Relevant Content

LearnCAD for Solidworks



Other Relevant Content

LearnRobotics



Mastercam Certification Curriculum



- X7 and future release Support
- Mill Design and Toolpaths
- Advanced Mill Design and Toolpaths
- Lathe
- **FREE New Home Learning Edition included with curriculum**



Mastercam Certification Curriculum

Mastercam Certification provides: learning pages, video, prints and helpful tips

Part 1 Demonstration

Objectives

- Circle Center Point (radius)
- Line Endpoints (angle)
- Circle Center (edge)
- Trim (three entity)
- Translate (rotate)
- Line Endpoints (horizontal, vertical)
- Line Endpoints Transform (translate join)
- Line Endpoints (midpoint arc)
- Trim (three entity)
- Translate (copy), Create Circle Center
- Circle Center (lock radius)
- Fillet (trim quadrants)
- Line Endpoints (tangent)
- Trim (extend)

Watch the video and learn how.

Videos

- [Example Video](#)

Prints

- [Large Drawing](#)

Recommended Mastercam Help Topics

- Sketcher
- AutoCursor Overview
- General Selection Ribbon Bar
- General Selection Button Definitions

Learning pages with embedded video

Prints

Helpful tips

Advanced CNC, Mold and Die

Advanced CNC 200: Milling and Drilling

- Modern CNC machines
- Multi-axis machining
- State of the art cutting tools and holders
- Advanced Milling Formulas
- High-speed and high-efficiency machining



Advanced CNC, Mold and Die

Dies 100: Introduction to Stamping Dies

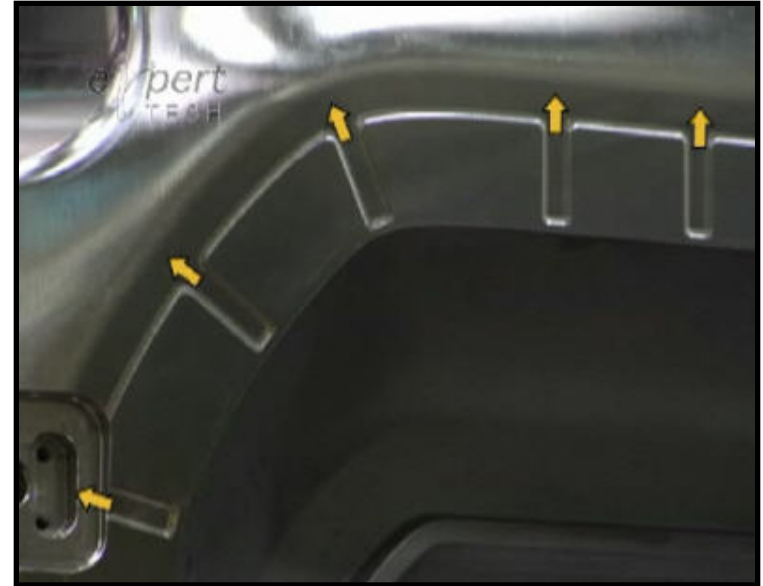
- Stamping dies and part functions
- Stamping die types and building processes
- Sheet metal cutting and forming



Advanced CNC, Mold and Die

Molds 100: Introduction to Plastic Injection Molds

- Plastic injection molds parts and functions
- Mold building, spotting and machining
- Molding plastics flow concepts



Skills Student Assessment Report

LearnCNC™ for Haas

July 15, 2013 12:30 AM

Test Average: **87%**

Examination: **85%**

Course ID	Test Name	Pre-Test	Score	Tests	Score	Change	Test Result
2010	Machine Motion	Mar 03, 2013 09:59 PM	7 / 10	Mar 03, 2013 10:14 PM	8 / 10	+10%	80%
2010	Mill Control Panel	Mar 03, 2013 10:16 PM	8 / 10	Mar 03, 2013 10:22 PM	8 / 10	+0%	80%
2010	Machine Startup	Mar 03, 2013 10:24 PM	9 / 10	Mar 03, 2013 10:28 PM	9 / 10	+0%	90%
2010	Manual Operations	Mar 03, 2013 10:31 PM	7 / 10	Mar 03, 2013 10:40 PM	6 / 10	-10%	60%
2010	Job Setup	Mar 03, 2013 10:42 PM	6 / 10	Mar 03, 2013 10:53 PM	9 / 10	+30%	90%
2010	Editor	Mar 03, 2013 10:56 PM	8 / 10	Mar 03, 2013 11:03 PM	8 / 10	+0%	80%
2010	Program Entry	Mar 03, 2013 11:04 PM	2 / 5	Mar 03, 2013 11:10 PM	5 / 5	+60%	100%
2010	Program Run	Mar 03, 2013 11:11 PM	5 / 5	Mar 03, 2013 11:14 PM	5 / 5	+0%	100%
2010	3-Axis CNC Milling Machine Setup (Old Control)	Examination		Mar 03, 2013 11:20 PM	35 / 40		
2310	Machine Motion	Mar 03, 2013 11:24 PM	17 / 20	Mar 03, 2013 11:29 PM	18 / 20	+5%	90%
2310	Mill Control Panel	Mar 03, 2013 11:30 PM	12 / 13	Mar 03, 2013 11:32 PM	13 / 13	+8%	100%
2310	Machine Startup	Mar 03, 2013 11:34 PM	15 / 16	Mar 03, 2013 11:36 PM	14 / 16	-6%	88%
2310	Manual Operations	Mar 03, 2013 11:41 PM	8 / 14	Mar 03, 2013 11:44 PM	9 / 14	+7%	64%
2310	Job Setup	Mar 03, 2013 11:47 PM	9 / 10	Mar 03, 2013 11:48 PM	10 / 10	+10%	100%
2310	Editor	Mar 03, 2013 11:50 PM	14 / 17	Mar 03, 2013 11:51 PM	17 / 17	+18%	100%
2310	Program Entry	Mar 03, 2013 11:52 PM	7 / 9	Mar 03, 2013 11:53 PM	9 / 9	+22%	100%
2310	Program Run	Mar 03, 2013 11:54 PM	6 / 6	Mar 03, 2013 11:55 PM	6 / 6	+0%	100%

Track Student Progress

- Track Progress



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User Progress Report

If you aren't Immersive Engineering [click here](#).

[My Immersive](#) ■ [Class Manager](#) ■ [Haas Class Editor](#) ■ [Haas Class Enrollment \(lhncd1\)](#)

LearnCNC for Haas Basic Operation and Programming

Up

Courses	Modules	Lessons	Pages Completed	Assess Completed	Assess Score	Cert
Course Introduction	2	6	23 / 23 100 %	0 / 0 0 %	0 / 0 0 %	---
Basic Haas VF-Series Milling Machine Setup (v2)	8	16	72 / 72 100 %	8 / 9 89 %	60 / 70 86 %	
Basic Haas VF-Series Milling Machine Programming	7	15	116 / 116 100 %	6 / 7 86 %	47 / 50 94 %	
Basic Haas CNC Lathe Setup (v2)	6	13	0 / 55 0 %	0 / 7 0 %	0 / 55 0 %	---
Basic Haas CNC Lathe Programming	5	9	0 / 31 0 %	0 / 6 0 %	0 / 35 0 %	---

Unique Certificate

- Branded to School: Time, date and serial identification



Basic Haas VF-Series Milling Machine Programming

Certificate of Completion

TTC Administrator

has successfully completed the online learning requirements established by:



Office of Tennessee Technology Centers
Tennessee Board of Regents
State University and Community College System of Tennessee

Online learning activities include:

- Interactive Exercises
- Chapter Tests
- Course Examinations
- M & G Code Programming Assignments with the Virtual CNC Emulator and Machines

Chapter Test and Course Examination Scores:

80 % Editor
80 % Job Setup
80 % Machine Motion
100 % Machine Startup
80 % Manual Operations
80 % Mill Control Panel
100 % Program Entry
100 % Program Run

Certified By: **TTC Administrator**
Organization: **Tennessee Technology Centers**

November 12, 2010
7800-2011-8007-78000000
ETTC7800

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Total Training Solution

Customer Branded Training System

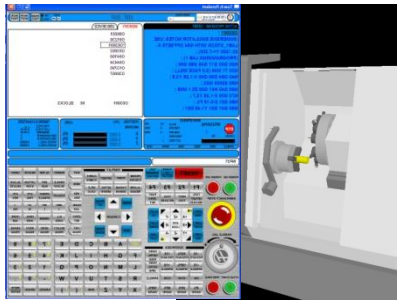
- Access at home, school and work
- Consolidates Industrial Product Training and Certification in ONE.

TRAIN

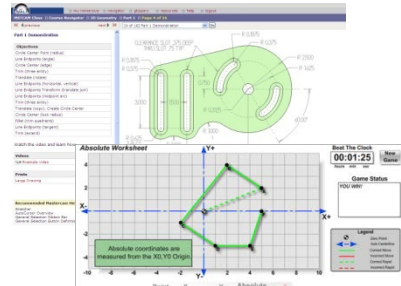
ASSESS

CERTIFY

Virtual Training Environment



Skills Learning Modules

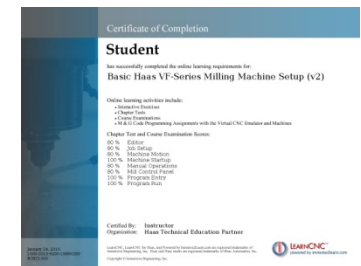


Pre/Post testing, exams, and reports



Pre-Test		Post-Test		Post-Test Average		Examinations
Date/Time	Score	Date/Time	Score	Change	Test Result	
28-Jun-05 10:32 AM	4 / 5	28-Jun-05 11:00 AM	4 / 5	+0%	80%	
28-Jun-05 01:00 PM	4 / 5	28-Jun-05 02:31 PM	5 / 5	+20%	100%	
28-Jun-05 09:02 AM	2 / 5	06-Jun-05 07:42 AM	5 / 5	+60%	100%	
28-Jun-05 08:16 AM	4 / 5	28-Jun-05 01:19 PM	5 / 5	+20%	100%	
28-Jun-05 10:00 AM	2 / 5	28-Jun-05 10:30 AM	5 / 5	+60%	100%	
28-Jun-05 07:39 AM	3 / 5	28-Jun-05 08:12 AM	5 / 5	+40%	100%	
28-Jun-05 08:37 AM	4 / 5	28-Jun-05 09:57 AM	5 / 5	+20%	100%	

Connect to Industry



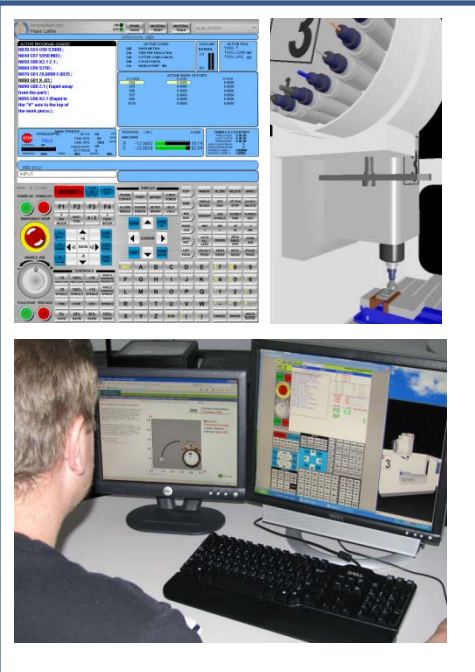
True Virtual Machining Advantage

Streamline Process

Reduce Bottlenecks

Reduce uncertainty

Learn and Verify
M&G Code Program on PC.



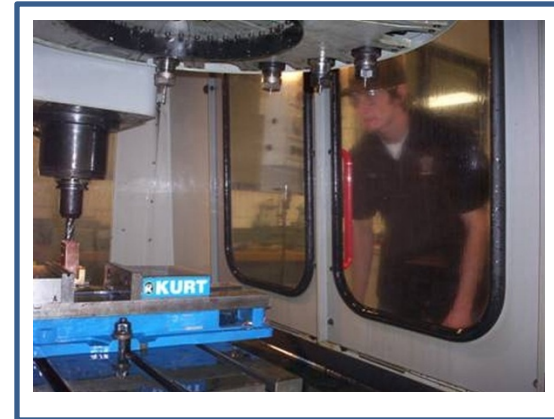
Prove-out to Instructor



Save to
Storage Device



Load on Machine Control



Going Pro in High School



Brian Aiken
Instructor

Pickens County Career Center

January 2007

- Implemented Virtual Training System
- Prepared Student for Skills Competition without a machine.
- Used system to recruit, retain and train.
- Grew program from 7 to 20 students.
- Expanded curriculum to offer professional development to local mold and die shops.
- Students are recruited by local employers directly from high school
 - 2007- Learn CNC
 - 2011- Advanced CNC, mold and die
 - 2012- Mastercam

https://www.youtube.com/watch?feature=player_detailpage&v=35eURqBlnCk

Go Beyond the Classroom



Mark Bosworth
Industrial Technology Coordinator
Southwestern Illinois College

- January 2009
Implemented Virtual Training System
 - Program grew from
3 to over 35 students per semester.
 - Used in Partnership with 5 high schools and
instructors in college's district.
 - Serves over 100
high school students per year.
 - Enables high school students to earn 4 SWIC
credit hours, free of charge!
 - Building deep bench of CNC machining
talent to compete in Skills USA competitions.
- 2011 National Skills USA Winners:
- 3rd place Precision Machining Technology
 - 5th place CNC Machining

Using Immersive for NIMS Credentialing

LearnCNC will help Prepare students
for the NIMS Credentialing Test

And

The performance Exams

Immerse2learn for NIMS

- Prepares students for NIMS Credentialing Test
- Measurement, Materials & Safety
- Job Planning, Benchwork & Layout
- CNC Turning: Programming Setup & Operations Level I&II
- CNC Milling: Programming Setup & Operations Level I&II
- CNC Lathe Operator
- CNC Mill Operator

NIMS Credential

- Materials, Measurement, and Safety

LearnCNC

Safety for Machining

Shop Mathematics Level I

Shop Mathematics Level II

Reading Manufacturing Blueprints

Precision Measurement

Speeds and Feeds

NIMS Credential

CNC Lathe Operator

LearnCNC Modules

CNC Lathe Control (Old and New)

CNC Lathe Programming

Shop Mathematics I&II

Reading Manufacturing Blueprints

Speeds and Feeds

Precision Measurement

NIMS Credential

CNC Mill Operator

LearnCNC Modules

CNC Mill Control (Old and New)

CNC Mill Programming

Shop Mathematics I&II

Reading Manufacturing Blueprints

Speeds and Feeds

Precision Measurement

NIMS Credential

- Job Planning, Benchwork, & Layout

LearnCNC

Safety for Machining

Shop Mathematics Level I

Shop Mathematics Level II

Reading Manufacturing Blueprints

Precision Measurement

Speeds and Feeds

NIMS Credential

CNC Lathe Programming and Setup
Levels I&II

LearnCNC Modules

CNC Lathe Control (Old and New)
CNC Lathe Programming
Shop Mathematics I&II
Reading Manufacturing Blueprints
Speeds and Feeds
Precision Measurement

NIMS Credential

CNC Mill Programming and Setup
Levels I&II

LearnCNC Modules

CNC Mill Control (Old and New)

CNC Mill Programming

Shop Mathematics I&II

Reading Manufacturing Blueprints

Speeds and Feeds

Precision Measurement