

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
0 to 4	0 to 4	Contact Hours Per Class	60	60	45	45	45	30	30
		Introduction and Welcome							
		Layout of the course. Review Expectations.	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R
		Establish classroom etiquette	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R
		Distribute student materials and supplies	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R	I,P,R
		Shop Safety							
		OSHA regulations.	I	R	R	R	R		
		10-hour OSHA Safety Course (online)			T				
		Safety equipment	I,P	P	P,R	P,R	P,R		
		Safe work practices	I,P	P	P,R	P,R	P,R		
		Clean work area	I,P	P	P,R	P,R	P,R		
		Appropriate shop attire	I,P	P	P,R	P,R	P,R		
		Introduction to Machining							
		Machine Types and Designs	I	P, R	R, T	A	A		
		Milling and Mill Operations	I	P, R	R, T	A	A		
		Lathes and Turning operations	I	P, R	R, T	A	A		
		Precision Grinding and Grind Operations	I	P, R	R, T	A	A		
		Rough/Finish Machining	I	P, R	R, T	A	A		
		Cylindricity, Flat, Parallel and Square	I	P, R	R, T	A	A		
		Workholding	I	P, R	R, T	A	A		
		Basic Measurement and Layout	I	P, R	R, T	A	A		
		Introduction to Machinery's Handbook	I	P, R	R, T	A	A		

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Print Reading							
		Introduction to Print Reading	I	P, R	R, T	A	A	A	A
		Viewing the Part Print and Understanding Print Standards	I	P,R	R,P,T	T,A	T, A	A	A
		Applied Drafting Fundamentals	I	P,R	R,P,T	T,A	T, A	A	A
		Title Block Information	I	P,R	R,P,T	T,A	T, A	A	A
		Alphabet of Lines	I	P,R	R,P,T	T,A	T, A	A	A
		Orthographic view	I	P,R	R,P,T	T,A	T, A	A	A
		Isometric and Auxillary views	I	P,R	R,P,T	T,A	T, A	A	A
		Sectional Views	I	P,R	R,P,T	T,A	T, A	A	A
		Reading and Interpreting Symbols on a Part Print	I	P,R	R,P,T	T,A	T, A	A	A
		Traditional Dimensioning	I	P,R	R,P,T	T,A	T, A	A	A
		Geometric Dimensioning and Tolerancing	I	P	P,R	R,T	A	A	A
		Surface Texture	I	P	P,R	R,T	A	A	A
		Tolerances	I	P	P,R	R,T	A	A	A
		The Title Block and Tolerances	I	P	P,R	R,T	A	A	A
		Print Reading for Inspection and Metrology	I	P	P,R	R,T	A	A	A
		The Parts of a Thread	I	P	P,R	R,T	A	A	A
		Standard Thread Notation	I	P	P,R	R,T	A	A	A
		Intro to Machine Operation							
		Milling machines and milling operations	I	P,R	R,P,T	T,A	T, A		R,A
		Demonstrate use of Conventional and climb milling		P,R	R,P,T	T,A	T, A		R,A
		Engine Lathes and lathe operations	I	P,R	R,P,T	T,A	T, A		R,A
		Tool Grinding (pedistal grinder)		I,P	R,P,T	T,A	T, A		R,A
		Drilling operations on a Milling Machine		I,P	R,P,T	T,A	T, A		R,A
		Boring operations: Mill and Drill Press		I,P	R,P,T	T,A	T, A		R,A
		Hole Generation and Tooling		I,P	R,P,T	T,A	T, A		R,A
		Cutting Fluids		I,P	R,P,T	T,A	T, A		R,A
		Grinding		I,P	R,P,T	T,A	T, A		R,A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Intro to Machine Operation: Continued							
		Precision Grinding Demonstrations (Surface and OD)	I	P,R		T,A	T, A		R,A
		Practice demonstrated operations and work on assigned projects		I,P	P,R,T	T,A	T,A		R,A
		Materials Science							
		Getting acquainted with metals	I	P,R	R,P,T	T,A	A		
		Chemical properties of metals	I	P,R	R,P,T	T,A	A		
		Physical properties of metals	I	P,R	R,P,T	T,A	A		
		Mechanical properties of metals	I	P,R	R,P,T	T,A	A		
		Iron and other ferrous metals	I	P,R	R,P,T	T,A	A		
		Steelmaking	I	P,R	R,P,T	T,A	A		
		Kinds of Steel	I	P,R	R,P,T	T,A	A		
		Nonferrous metals and their alloys especially copper	I	P,R	R,P,T	T,A	A		
		Other Common Materials	I	P,R	R,P,T	T,A	A		
		Experimentation with machining a variety of ferrous and non-ferrous		I,P	R,P,T	T,A	A		P,R,A
		Fundamentals of Machine Shop Math							
		Fractions and decimals/adding and sub signed numbers	I	P	R,T	T,A	A		A
		Calculator use	I	P	R,T	T,A	A		A
		Fundamentals of the Inch and Metric System	I	P	R,T	T,A	A		A
		Metric/Inch Conversions	I	P	R,T	T,A	A		A
		Equations	I,P	R	R,T	T,A	A	A	A
		Application to shop math	I,P	R	R,T	T,A	A	A	A
		Speed/Feed Calculations		I,P	P,R, T	T,A	A	A	A
		Effects on Tool Life		I,P	P,R, T	T,A	A	A	A
		How to Determine Appropriate Running Speed		I,P	P,R, T	T,A	A	A	A
		Cutting Speeds for Various Materials		I,P	P,R, T	T,A	A	A	A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Advanced Machine Shop Math							
		Cartesian Coordinates	I,P	R	R,T	T,A	A	A	A
		Polar Coordinates	I,P	R	R,T	T,A	A	A	A
		Introduction to Geometry	I,P	R	R,T	T,A	A	A	A
		Pythagorean Theorem	I,P	R	R,T	T,A	A	A	A
		Introduction to Trigonometry	x	I,P	P,R, T	T,A	A	A	A
		Application of Trigonometry		I,P	P,R, T	T,A	A	A	A
		Geometric Dimensioning and Tolerancing							
		Preliminary Example	I		I,P,R	T,A	A	A	A
		Geometric Characteristcs and Symbols	I,P	R	R,T	T,A	A	A	A
		Datum Symbols	I,P	R	R,T	T,A	A	A	A
		Mating Parts	I,P	R	R,T	T,A	A	A	A
		Fundamentals of Geometric Dimensions and Tol.	I		I,P,R	T,A	A	A	A
		Y14.5M-2009	I		I,P,R	T,A	A	A	A
		Geometric Position Tolerances: Practical Applications	I,P	R	R,T	T,A	A	A	A
		Maximum Material Condition	I,P	R	R,T	T,A	A	A	A
		Position	I,P	R	R,T	T,A	A	A	A
		Least Material Condition	I,P	R	R,T	T,A	A	A	A
		Size Tolerances and Form Control	I,P	R	R,T	T,A	A	A	A
		Material Condition Modifiers and the Feature Control Frame	I		I,P,R	T,A	A	A	A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Precision Measurement							
		Converting and Rounding Decimal and Tolerance Limit Values	I	I,P,R	P,R,T	R,T,A	A	A	A
		Avoiding Errors in Performing and Expressing Calculations	I	I,P,R	P,R,T	R,T,A	A	A	A
		Using the Steel Rule	I	I,P,R	P,R,T	R,T,A	A	A	A
		Measuring Geometric Tolerances	I	I,P,R	P,R,T	R,T,A	A	A	A
		Datums	I	I,P,R	P,R,T	R,T,A	A	A	A
		Fixturing Workpieces and Establishing Datums	I	I,P,R	P,R,T	R,T,A	A	A	A
		Bonus Tolerance	I	I,P,R	P,R,T	R,T,A	A	A	A
		Quality Control while Measuring Parts	I	I,P,R	P,R,T	R,T,A	A	A	A
		Identifying Features and Types of Micrometers	I						
		Use and Care of a Micrometer	I	I,P,R	P,R,T	R,T,A	A	A	A
		Methods of Measuring Threads	I	I,P,R	P,R,T	R,T,A	A	A	A
		Reading and Totaling Micrometer Measurements	I	I,P,R	P,R,T	R,T,A	A	A	A
		Repeatability and the 10 to 1 rule	I	I,P,R	P,R,T	R,T,A	A	A	A
		Digital Micrometers	I		P,R,T	R,T,A	A	A	A
		Caliper Measurements and Components	I		P,R,T	R,T,A	A	A	A
		Measure Workpiece Features with a Dial Caliper	I	I,P,R	P,R,T	R,T,A	A	A	A
		Measuring with Vernier and Digital Calipers	I	I,P,R	P,R,T	R,T,A	A	A	A
		Go, No-Go Gages	I	I,P,R	P,R,T	R,T,A	A	A	A
		Characteristics of Surface Finish	I		P,R,T	R,T,A	A	A	A
		Identify Units of Measure for Surface Finish	I		P,R,T	R,T,A	A	A	A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Precision Measurement: Continued							
		Using Analog and Digital Profilometers							
		The Portable Surface Roughness Gage							
		Using Optical Comparators to Measure Threads							
		Inspection Techniques		I,P,R	P,R,T	R,T,A	A		A
		Open Setup Inspection and the use of Dial Indicators		I,P,R	P,R,T	R,T,A	A		A
		Surface Plates and Holding Devices for Open Inspection							
		Using Gage Blocks for Open Inspection			P,R,T	R,T,A	A		A
		Combining Gage Blocks and Sine Bars			P,R,T	R,T,A	A		A
		Fundamentals of Height Gages			P,R,T	R,T,A	A		A
		Measuring with Cadillac and Comparator Height Gages			P,R,T	R,T,A	A		A
		Measuring with Electronic Height Gages			P,R,T	R,T,A	A		A
		Fundamentals of Coordinate Measuring Machines			I,P,R	P,R,T	R,T		A
		Preparing the CMM for Measurement			I,P,R	P,R,T	R,T		A
		Aligning the CMM Coordinate System			I,P,R	P,R,T	R,T		A
		Common Measurement Procedures using a CMM			I,P,R	P,R,T	R,T		A
		The Basic CNC Lathe			I,P,R	P,R,T	R,T		A
		Lathe Components and Principles of Operation			P,R,T	R,T,A	A		A
		The Coordinate Grid System		I,P,R	P,R,T	R,T,A	A		A
		The Signs of Coordinates and Directions of Movement		I,P,R	P,R,T	R,T,A	A		A
		Controlling Turret Movements				I,P			

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
			CNC Turning Centers and CNC Machining Centers						
		CAD/CAM Overview	I			I	I,P	P,R,T	P,R,T
		Generating Part Geometry in 2-D	I			I	I,P	P,R,T	P,R,T
		Design with Machining in Mind						I	I,P
		Parametric Solid Modeling						I	I,P
		Introduction to Mastercam		I					I,P
		Machining Operations and their Tools		I					I,P
		EIA and Conversational Programming Languages	I			I,P	P,R		P,R,T
		Basic Programming Codes	I	I		I,P	P,R		P,R,T
		The Structure of Conversational Part Programs	I	I		I,P	P,R		P,R,T
		Programming Systems	I	I		I,P	P,R		P,R,T
The Basic CNC Machining Center									
		Basic Machining Center Principles	I	I		I,P	P,R		P,R,T
		The Machining Center Control and its Components	I			I,P	P,R		P,R,T
		The Machining Center Coordinate Grid System	I			I,P	P,R		P,R,T
		The Signs of Coordinates and Directions of Movement	I			I,P	P,R		P,R,T
		Using Coordinate Grids on Machining Centers	I			I,P	P,R		P,R,T
		Controlling Tool Movement	I			I,P	P,R		P,R,T
		Milling Tools and Operations	I			I,P	P,R		P,R,T
		Other Tooling Operations and Coolant Use	I			I,P	P,R		P,R,T
		Manual Machine Controls	I			I,P	P,R		P,R,T
		Homing the Machine and Over-Travel Recovery				I,P	P,R		P,R,T
		Machining Center Operation and Program Execution				I,P	P,R		P,R,T

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Understanding Part Programs: Turning Centers							
		Execution of Programs from Memory				I,P,T	P,R		A
		Common Programming Codes	I	I		I,P,T	P,R		A
		Manual Machine Codes	I	I		I,P,T	P,R		A
		Units of Measure and Initialization Blocks	I	I		I,P,T	P,R		A
		Absolute and Incremental Programming	I	I		I,P,T	P,R		A
		Subprograms and G50 Codes				I,P,T	P,R		A
		Elements of Conversational Programming				I,P,T	P,R		A
		The Fanuc FAPT and Okuma IGF Languages				I,P,T	P,R		A
		Understanding Part Programs: Machining Centers							
		Programming Methods of CNC Machining Centers				I,P,T	P,R		A
		Basic EIA Programming				I,P,T	P,R		A
		The Structure of Conversational Programs				I,P,T	P,R		A
		EIA Language Extensions				I,P,T	P,R		A
		Common Programming Codes				I,P,T	P,R		A
		Program Execution				I,P,T	P,R		A
		Initialization Blocks				I,P,T	P,R		A
		Absolute and Incremental Programming				I,P,T	P,R		A
		Homing the Machine				I,P,T	P,R		A
		Understanding Tool Paths				I,P,T	P,R		A
		Sub-Programs and Optional Stop Codes				I,P,T	P,R		A
		Initialization Units for Conversational Programs				I,P,T	P,R		A
		Lathe Operator Skills							
		Memory Allocation and Program Directories				I,P,T	P,R		A
		Understanding Tool Offsets				I,P,T	P,R		A
		Entering Tool File and Tool Data Information on Conversational Controls				I,P,T	P,R		
		Powering Up the Lathe				I,P,T	P,R		A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Lathe Operator Skills - Continued							
		Homing the Machine				I,P,T	P,R		A
		Production Machining Operations				I,P,T	P,R		A
		Maintaining Workpiece quality				I,P,T	P,R		A
		Using Offsets to Correct Dimensional Errors				I,P,T	P,R		A
		Inspecting and Replacing Inserts				I,P,T	P,R		A
		Program Restart After Correcting a Problem				I,P,T	P,R		A
		Machining Center Operator Skills -- Manual or CNC							
		Machine Start-up	I	P	P,R	I,P,T	P,R		A
		Memory Allocation and Program Directories				I,P,T	P,R		A
		File Management				I,P,T	P,R		A
		Loading and Deleting Programs				I,P,T	P,R		A
		The Fundamentals of Tool Length Offsets	I			I,P,T	P,R		A
		The Fundamentals of Cutter Radius Compensation	I			I,P,T	P,R		A
		Tool Offsets Data Displays							
		Fundamentals of SPC	I			I,P,T	P,R		A
		Identifying Quality Problems	I			I,P,T	P,R		A
		Troubleshooting Quality Problems	I			I,P,T	P,R		A
		Responding to a Quality Problem	I			I,P,T	P,R		A
		Calculating Tool Offsets	I			I,P,T	P,R		A
		Identifying and Correcting Tooling Problems				I,P,T			
		Restarting a Program after Correcting a Problem				I,P,T			

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Basic Setup Skills: Manual Turning Centers							
		Process Planning and Reading the Print	I	P	R,T	R,A	R,A		P,R,A
		Planning and Workpiece Holding	I	P	R,T	R,A	R,A		P,R,A
		Planning the Order of Machining	I	P	R,T	R,A	R,A		P,R,A
		Planning the Tooling	I	P	R,T	R,A	R,A		P,R,A
		Setting Up a Three-Jaw Chuck		I	P,R	R,A	R,T		
		Setting Up a Collet Chuck		I	P,R	R,A	R,T		
		Setting Up Tailstocks		I	P,R	R,A	R,T		
		Identifying and Installing Tools		I	P,R	R,A	R,T		
		Basic Setup and Programming Skills: CNC Machining Centers							
		Tool Life Management Data				I,P,T	R		A
		Finding Program Zero				I,P,T	R		A
		Finding and Entering Tool Offsets				I,P,T	R		A
		Establishing the Safe Index Location				I,P,T	R		A
		Work Holding Devices				I,P,T	R		A
		Selecting Work Holding Devices and Installing Workpieces and Fixtures				I,P,T	R		A
		Identifying and Selecting Tooling				I,P,T	R		A
		ANSI Tooling Classification Methods				I,P,T	R		A
		American National Standards Institute				I,P,T	R		A
		How to Interpret ANSI Codes				I,P,T	R		A
		Setting up an ATC and Installing Tooling				I,P,T	R		A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Basic Setup and Programming Skills: CNC Machining Centers - Continued							
		Establishing Program Zero with the G92 Code				I,P,T	R		A
		Locating and Dialing-in Zero Surfaces				I,P,T	R		A
		Establishing Program Zero using G54-59 Codes				I,P,T	R		A
		Local Coordinate Systems using G52				I,P,T	R		A
		Finding and Entering Tool Length Offsets				I,P,T	R		A
		Setting Tool Length Offsets with G92-Based Programs				I,P,T	R		A
		G54 to G59 Tool Length Offsets Using a Reference Tool				I,P,T	R		A
		G54 to G59 Tool Length Offsets using the Zero Height Method				I,P,T	R		A
		Understanding Cutter Radius Compensation				I,P,T	R		A
		Entering and Adjusting Cutter Radius Compensation Values				I,P,T	R		A
		Advanced Setup Skills: CNC Turning Centers							
		Arc Programming in EIA				I,P,T	R		A
		Entering Material Shape and M Code Data				I,P,T	R		A
		Selecting Mode and Part Data for a Process				I,P,T	R		A
		Basic Canned Cycle Commands				I,P,T	R		A
		Tapping and Boring Canned Cycles				I,P,T	R		A
		Entering Bar Modes and End Processes				I,P,T	R		A
		Manual Programming in Conversational Programs				I,P,T	R		A
		Copy and Corner Processes				I,P,T	R		A
		Threading Cycles				I,P,T	R		A
		Turning and Facing Canned Cycles				I,P,T	R		A
		Profile-Turning and Profile Facing Canned Cycles for Roughing Bar Stock				I,P,T	R		A
		Thread Cutting on Conversational Controls				I,P,T	R		A
		Canned Cycles for Drilling and Grooving				I,P,T	R		A

TWO YEAR, 300 HOUR MANUAL AND CNC-MACHINE OPERATOR CURRICULUM

Employer *Competency Assessment	Instructor *Competency Assessment	Topics: I = Introduced, P = Practiced, R - Reinforced, T = Tested for Competency A = Applied	Year 1: Machine Processes 1A	Year 1: Machine Processes 1B	Year 1: Machine Processes II	Year 2: CNC Machining Fundamentals and Techniques	Year 2: Advanced Machining Applications	Year 2: SolidWorks CSWA Prep	Year 2: Fundamentals of Mastercam
		Advanced Setup Skills: CNC Turning Centers							
		Graphic Functions on Conversational Controls				I,P,T	R		A
		Dry Running the Program				I,P,T	R		A
		Preparing for the Trial Run				I,P,T	R		A
		Trial Running the Program				I,P,T	R		A
		Advanced Setup Skills: Machining Centers							
		Programming Circular Features in EIA				I,P,T	R		A
		Correcting Full Circle Features				I,P,T	R		A
		Manual Programming within a Conversational Program				I,P,T	R		A
		Basic Canned Cycle Commands				I,P,T	R		A
		Canned Cycles for Drilling, Boring, and Tapping				I,P,T	R		A
		Drilling Units				I,P,T	R		A
		Tapping Units				I,P,T	R		A
		Boring and Counter-Boring Units				I,P,T	R		A
		Reaming Units				I,P,T	R		A
		Understanding Line Milling Units				I,P,T	R		A
		Entering Line Milling and Chamfering				I,P,T	R		A
		Dry Running the Program				I,P,T	R		A
		Trial Running the Program				I,P,T	R		A
		Calculating New Coordinates				I,P,T	R		A
		Making Program Edits				I,P,T	R		A
		TOTAL HOURS OF IN-CLASS INSTRUCTION AND LAB: 310							
		APPROX. HOURS OF ADDITIONAL HOMEWORK: 60							
		* 0 = No Exposure							
		* 1 = Introduced							
		* 2 = Practiced							
		* 3 = Competent							
		* 4 = Mastery							