

## Advisory Committee Minutes Fall 2019

### Machining

Vernon College – Skills Training Center

October 28, 2019 at 12:00pm

Eric Michaeli - Chair

David Kulbeth - Vice Chair

Mark McMillan - Recorder

#### Members Present:

Ian Anderson, Kalco Machine and Manufacturing  
Jack Brazeau, Sharp Iron  
Scotty Fransisco, Wichita Clutch  
David Kulbeth, Kalco Machine and Manufacturing  
Mike Kwas, Howmet  
Mark McMillan, Production Machine  
Eric Michaeli, Wichita Clutch

#### Faculty and Staff Present:

Shana Drury  
Chelsey Henry  
Mark Holcomb  
Chris Rivard  
Holly Scheller  
Mollie Williams

*Eric Michaeli opened the meeting with new business*

#### Review program outcomes, assessment methods/results, and workplace competency

#### Program Outcomes:

*Eric Michaeli asked if the committee would review the following and if the faculty member would briefly review the program outcomes with the committee. Mark Holcomb stated these were the previous outcomes. Chris Rivard clarified a couple of things on courses.*

1. Blueprint Reading – Students must be able to read and interpret drawings that are given on multiple parts of an assembly. Part material selection, orientation, and feature tolerances are the most critical.
2. Measurement – Students must be able to use applicable measuring processes to verify the size and location of part features. The ability to measure is not limited to precision tools but also micrometer hand wheels that provide precise movements on machine tools such as mills and lathes.
3. Tooling and Fixtures – Students must be able to know how to hold and manipulate parts to be machined. When conventional holding methods fail, students must be able to create suitable fixtures that hold parts in the correct orientation so they can be held in place throughout the machining process.
4. Programming and Editing – Students must have a good working knowledge of programming using common G&M codes and syntax. Students must be able to isolate and correct programming issues.
5. Setup and Operation – Students must be knowledgeable about how a mill and lathe works (both CNC and Conventional). Students must understand how the machine uses tools and how the machine applies a part program to its coordinate envelope. They must be able to use the machines registry for setups and tooling compensation.

*Eric Michaeli asked the committee for a motion to approve the program outcomes as presented.  
Mike Kwas made a motion to approve the program outcomes as presented.  
Scotty Francisco seconded the motion.*

*The motion passed and the committee approves the program outcomes as presented.*

### **Assessment Methods and Results:**

*Eric Michaeli asked the faculty member, Chris Rivard, to explain in more detail the assessment methods and results.*

Through classroom activities, along with quizzes and tests, students are assessed on their basic understanding of the material and concepts related to machining.

Labs are used to assess the students on the ability to use the knowledge in scenarios that simulate a process in which the knowledge is used.

Projects, such as the Capstone, assess the ability to combine knowledge for use in a work setting.

*Eric Michaeli asked the committee for a motion to approve the assessment methods and results as presented.*

*Mark McMillian made a motion to approve the assessment methods and results as presented.*

*Mike Kwas seconded the motion.*

*The motion passed and the committee approves the assessment methods and results as presented.*

### **Workplace competency:**

*Eric Michaeli asked the faculty member to please tell the committee about the workplace competency.*

*Shana Drury suggested tabling this until next fall when we have actual data to report on once we have students go through the program.*

### **Program Specific Accreditation Information and Requirements (if applicable)**

*None*

### **Review program curriculum/courses/degree plans**

*Eric Michaeli asked the instructor to discuss with the committee on the program's curriculum and degree plans.*

# Machining, Level 1 Certificate

CIP 48.0501

Level 1 Certificate

## **MACHINING - CNC**

Instructional Location - Skills Training Center

**CERTIFICATE OF COMPLETION** (Probable Completion Time – 9 months or 32 weeks)

### Major Requirements (31 SH)

#### Fall Block

<b><u>MCHN 1302</u></b>	Print Reading for Machining Trades	3
<b><u>MCHN 1320</u></b>	Precision Tools and Measurement	3
<b><u>MCHN 1408</u></b>	Basic Lathe	4
<b><u>MCHN 1413</u></b>	Basic Milling Operations	4

#### Spring Block

<b><u>MCHN 1426</u></b>	Introduction to Computer-Aided Manufacturing (CAM)	4
<b><u>MCHN 2433</u></b>	Advanced Lathe Operations	4
<b><u>MCHN 2441</u></b>	Advanced Machining I	4
<b><u>MCHN 2444</u></b>	Computerized Numerical Control Programming	4
	<b>Total Credit Hours:</b>	<b>30</b>

#### Verification of Workplace Competencies: Capstone Experience –

<b><u>MCHN 2441</u></b>	Advanced Machining I	4
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#### Machining Occupational Skills Award (11 Semester Hours):

<b><u>MCHN 1320</u></b>	Precision Tools and Measurement	3
<b><u>MCHN 1426</u></b>	Introduction to Computer-Aided Manufacturing (CAM)	4
<b><u>MCHN 2444</u></b>	Computerized Numerical Control Programming	4

**MCHN 1302 - Print and Reading for Machining Trades** - A study of blueprints for machining trades with emphasis on machine drawings.

Identify the elements of machine drawings; interpret dimensions, tolerances, and geometric aspects of blueprints; and explain Geometric Dimensioning and Tolerancing (GD&T) symbols and their meanings.

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**MCHN 1320 - Precision Tools and Measurement** - An introduction to the modern science of dimensional metrology. Emphasis on the identification, selection, and application of various types of precision instruments associated with the machining trade. Practice of basic layout and piece part measurements while using standard measuring tools.

Perform common methods of measurement conversion; determine the degree of precision measurement required; identify various types of precision instruments and their applications; list maintenance procedures on various types of measuring instruments; interpret and confirm blueprint requirements; convert between English and metric units; compute total tolerances of parts; calibrate various types of precision measuring instruments to a standard; and select and use precision measurement tools.

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**MCHN 1408 - Basic Lathe** - An introduction to the common types of lathes. Emphasis on basic parts, nomenclature, lathe operations, safety, machine mathematics, blueprint reading, and theory.

Identify engine lathe components; match cutting speeds and feeds to materials; list safety procedures; identify machine accessories; identify types of lathes; use formulas to calculate speeds and feeds; set up basic lathe operations; perform metal removing operations such as turning, facing, drilling, grooving, turning on centers, and threading; and perform basic machine maintenance.

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**MCHN 1413 - Basic Milling Operations** - An introduction to the common types of milling machines, part nomenclature, basic machine operations and procedures, safety, machine mathematics, blueprint reading, and theory.

Identify milling machine components and their functions; identify types of milling machines; describe the difference between climb and conventional milling; calculate speeds and feeds for milling machines; set up milling machines; and operate milling machines.

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**MCHN 1426 - Introduction to Computer-Aided Manufacturing (CAM)** - A study of Computer-Aided Manufacturing (CAM) software which is used to develop applications for manufacturing. Emphasis on tool geometry, tool selection, and the tool library.

Use Computer-Aided Manufacturing software to create part programs; transfer programs to the machine control unit; and machine parts.

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**MCHN 2433 - Advanced Lathe Operations** - Identify and use of special lathe cutting tools and support tooling, such as, form tools, carbide inserts, taper attachments, follower and steady rest. Close tolerance machining required.

Identify and apply special lathe tooling; list machine and work setup procedures; list and explain machining operation procedures; calculate speeds and feeds; perform advanced setups utilizing support tooling; and perform advanced machining operations to specifications.

**MCHN 2441 - Advanced Machining I** - Advanced lathe and milling operations. Emphasis on advanced cutting operations of the lathe and milling machines, including the use of special tooling, bench assembly, and materials identification.

Identify and apply special tooling for the lathe and milling machines; list machine and work setup procedures; identify and select proper tooling for machining of specific materials; and perform advanced lathe and milling machine setup to specifications.

**MCHN 2444 - Computerized Numerical Control Programming** - An introduction to G and M codes (RS274-D) necessary to program Computer Numerical Controlled (CNC) machines.

Write, simulate, edit execute CNC programs; calculate the feeds and speeds for various materials; and select the appropriate tooling.

**Suggested revisions:**

*Shana Drury informed the committee of the courses listed below that with the changes that Chris Rivard is recommending. Chris explained he took several things into consideration when making these changes including the workforce as well as the students. He thinks these changes will increase the skills of the students. There was some discussion about combining courses to include the skills from courses that are being dropped.*

## Machining 20-21

Certificate Level 1, CIP 48.0501, 32 wks

CIP	Course	Title	Sem	SCH	Lec	Lab	Contact	
							Hrs	
48.0501	MCHN 1320		F II	3	3	1	64	
48.0501	MCHN 1408	-	F	-	3	2	-	
48.0501	MCHN 1413	-	F	-	3	2	-	
48.0501	MCHN 1438		F II	4	3	2	80	
48.0501	MCHN 1302		F I	3	3	1	64	
27.0301	TECM 1303		F I	3	3	0	48	
48.0501	MCHN 2434		Spr I	4	3	2	80	
48.0501	MCHN 1426		Spr I	4	3	2	80	
48.0501	MCHN 2438		Spr II	4	3	2	80	
48.0501	MCHN 2433	-	-	-	3	2	-	
48.0501	MCHN 2441		Spr II	4	3	2	80	
48.0501	MCHN 2444	-	-	-	3	2	-	
							29	576

*Eric Michaeli asked the committee for a motion to approve the program revisions as presented.  
Mark McMillan made a motion to approve the program revisions as presented.  
David Kulbeth seconded the motion*

The motion passed and the committee approves the program revisions as presented.

**Review Secretary’s Commission on Achieving Necessary Skills (SCANS), General Education, and Program Outcomes Matrices**

Eric Michaeli asked the committee to review the four matrices, as well as asking the faculty member to discuss the matrices with the committee. Mark Holcomb reviewed the matrices with the committee.

SCANS Matrix: The SCANS (Secretary’s Commission on Achieving Necessary Skills) Matrix represents the 8 Federal requirements that must be taught. The matrix shows how we are mapping them back to each of the courses in the program.

<b>Program: Machining</b>								<b>Credential: Certificate of Completion</b>	
Award: Machining -CNC Certificate of Completion									
Cip: 48.0501									
<b>LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES</b>									
<b>SCANS COMPETENCIES</b>								<b>Course Number</b>	<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>		
X	X	X	X	X	X	X	X	MCHN 1320	Precision Tools and Measurement
X		X	X	X	X	X		MCHN 1408	Basic Lathe
X		X	X	X	X	X		MCHN 1413	Basic Mill
X	X	X		X	X	X	X	MCHN 1426	Introduction to Computer-Aided Manufacturing (CAM)
X	X	X		X	X	X		MCHN 1302	Print Reading for Machining Trades
X	X	X		X	X	X	X	MCHN 2433	Advanced Lathe Operations
X	X	X		X	X	X	X	MCHN 2441	Advanced Machining
X	X	X	X	X	X	X	X	MCHN 2444	Computerized Numerical Control Programming
								<b>PROGRAM COMPETENCIES (as determined by advisory committee)</b>	
								8. BASIC USE OF COMPUTERS	
								7. WORKPLACE COMPETENCIES	
								6. PERSONAL QUALITIES	
								5. THINKING SKILLS	
								4. SPEAKING AND LISTENING	
								3. ARITHMETIC OR MATHEMATICS	
								2. WRITING	
								1. READING	

**General Education Matrix: The General Education Matrix is state mandated. You will see the 6 requirements that the college is tasked with teaching and how they map back to the courses.**

<b>Program: Machining</b>							<b>Credential: Certificate of Completion</b>
Award: Machining -CNC Certificate of Completion							
Cip: 48.0501							
<b>LIST OF ALL COURSES REQUIRED AND IDENTIFIED CORE OBJECTIVES</b>							
<b>GENERAL EDUCATION CORE OBJECTIVES</b>						<b>Course Number</b>	<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		
X		X	X		X	MCHN 1320	Precision Tools and Management
X		X	X		X	MCHN 1408	Basic Lathe
X		X	X		X	MCHN 1413	Basic Mill
X	X	X	X		X	MCHN 1426	Introduction to Computer-Aided Manufacturing (CAM)
X	X	X		X	X	MCHN 1302	Print Reading for Machining Trades
X		X	X	X	X	MCHN 2433	Advanced Lathe Operations
X	X	X	X	X	X	MCHN 2441	Advanced Machining
X	X	X			X	MCHN 2444	Computerized Numerical Control Programming
						<b>6. Personal Responsibility</b> - to include the ability to connect choices, actions, and consequences to ethical decision-making.	
						<b>5. Social Responsibility</b> - to include intercultural competence, civic knowledge, and the ability to engage effectively in regional, national, and global communities.	
						<b>4. Teamwork</b> - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	
						<b>3. Empirical and Quantitative Skills</b> - to include applications of scientific and mathematical concepts	
						<b>2. Communication Skills</b> - to include effective written, oral, and visual communication	
						<b>1. Critical Thinking Skills</b> - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	

**Program Outcomes Matrix:** The Outcomes Matrix represents the Vernon College mandated requirements. They are the Program outcomes just approved and how they map back to the courses.

<b>Program: Machining</b>					<b>Credential: Certificate of Completion</b>	
Award: Machining -CNC Certificate of Completion						
Cip: 48.0501						
<b>LIST OF ALL COURSES REQUIRED AND OUTCOMES</b>						
<b>OUTCOMES</b>					<b>Course Number</b>	<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>		
X	X				MCHN 1320	Precision Tools and Measurement
X	X	X		X	MCHN 1408	Basic Lathe
X	X	X		X	MCHN 1413	Basic Mill
X	X	X	X	X	MCHN 1426	Introduction to Computer-Aided Manufacturing (CAM)
X	X				MCHN 1302	Print Reading for Machining Trades
X	X	X	X	X	MCHN 2433	Advanced Lathe Operations
X	X	X	X	X	MCHN 2441	Advanced Machining
X			X		MCHN 2444	Computerized Numerical Control Programming
					<b>PROGRAM OUTCOMES (as determined by advisory committee)</b>	
					<b>5. Setup and Operation</b> - Correctly setup and operate conventional and CNC machinery to accomplish a variety tasks.	
					<b>4. Programming and Editing</b> - Create and/or edit computer numerical control (CNC) programs using standard G&M code.	
					<b>3. Tooling and Fixtures</b> - Select and assemble tooling and fixtures for various applications common in the machining industry.	
					<b>2. Measurement</b> - Demonstrate proper selection and utilization of precision measurement tools according to application.	
					<b>1. Blueprint reading</b> - Accurately read and interpret blueprints commonly found in the machining industry, including a fundamental knowledge and application of the rules and symbols of Geometric Dimensioning and Tolerancing.	



**Institutional Outcomes Matrix:** The Institutional Outcomes Matrix represents the Vernon College mandated requirements. This matrix represents how the program outcomes map back to the institutional outcomes/general education outcomes.

<b>Program: Machining</b>					<b>Credential: Certificate of Completion</b>
Award: Machining -CNC Certificate of Completion					
Cip: 48.0501					
<b>LIST OF ALL COURSES REQUIRED AND OUTCOMES</b>					
<b>OUTCOMES</b>					<b>Course Title</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	
X	X	X	X	X	Critical Thinking Skills
X	X	X	X	X	Communication Skills
X	X	X	X	X	Empirical and Quantitative Skills
X	X	X	X	X	Teamwork
X	X	X	X	X	Social Responsibility
X	X	X	X	X	Personal Responsibility
			<b>5. Setup and Operation</b>		
			<b>4. Programming and Editing</b>		
		<b>3. Tooling and Fixtures</b>			
	<b>2. Measurement</b>				
<b>1. Blueprint reading</b>					

*Eric Michaeli asked the committee for a motion to approve the matrices as presented.*

*Mark McMillan made a motion to approve the matrices as presents.*

*Scotty Francisco seconded the motion.*

*The motion passed and the committee approved the matrices as presented.*

**Program statistics: Graduates (from previous year/semester), current majors, current enrollment**

- Program Statistics:
  - Graduates 2017-2018: 4
  - Enrollment Summer 2018: 0
  - Majors Fall 2018-2019: 0
  - Enrollment Fall 2018: 0

**Local Demand**

*Mark McMillian did tell the committee that it is harder to find jobs when the oil and gas industry is in a down turn.*

*Mike McMillan did mention that once people are in jobs in his area they stay until they retire usually.*

*Jack Brazeau does have a position open currently. He did mention that he did not think he would ever turn down a skilled machinist.*

**Evaluation of facilities, equipment, and technology. Recommendation for acquisition of new equipment and technology.**

*Eric Michaeli asked if the committee had an opportunity to tour the facilities and Chris Rivard offered to take anyone who had not over after the meeting for a tour. Eric asked if the committee had any recommendations for facilities, equipment, and technology.*

- 3 Mini Lathes plus Tooling
- 3 Drill/Mill
- 1 Manual Lathe plus Tooling
- Inserted Cutting Tools
- Band Saw
- Chop Saw
- Fusion 360 Software
- Cimco Edit Software

*Chris Rivard stated that he would like to acquire additional CNC mills and lathes. Several of the committee members mentioned that they would be willing to help with raw materials that the program could use.*

**External learning experiences, employment, and placement opportunities**

*Eric Michaeli asked if the faculty would review the following with the committee.*

\*Due to Perkins transition this is the most recent report

Placement Rate of Program Completers by Reporting Year [1]			
Program	2013-2016 3-Year Average		
	Plc	Cmp	%
48050000-Precision Metal Working	60	64	93.75%

## **Professional development of faculty and recommendations**

*Eric Michaeli asked Chris Rivard to give the committee a little more information on the professional development listed below.*

NYC/CNC Fusion 360 Training

## **Promotion and publicity (recruiting) about the program to the community and to business and industry**

*Eric Michaeli asked if anyone had any recommendations for publicity and promotion.*

The Machining program has now been introduced back into STC site recruiting tours.

Facebook ads – summer 2019

Billboard

Preview days


Recruiting

## **Serving students from special populations:**

*Eric Michaeli asked the committee to review the information below. Shana Drury did mention that using non traditional people in the field to speak to students on preview day could be beneficial.*

1. Special populations new definitions:
  - a. Individuals with disabilities;
  - b. Individuals from economically disadvantaged families, including low-income youth and adults;
  - c. Individuals preparing for non-traditional fields;  
2 males in the full program at this time.
  - d. Single parents, including single pregnant women;
  - e. Out-of-workforce individuals;
  - f. English learners;
  - g. Homeless individuals described in section 725 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11434a);
  - h. Youth who are in, or have aged out of, the foster care system; and
  - i. Youth with a parent who—
    - i. a. is a member of the armed forces (as such term is defined in section 101(a)(4) of title 10, United States Code);
    - ii. b. is on active duty (as such term is defined in section 101(d)(1) of such title).

*With no further discussion Eric Michaeli adjourned the meeting at 1:13pm*

Recorder Signature 	Date 8-19-20	Next Meeting: Fall 2020
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