



WISCONSIN
INDIANHEAD
TECHNICAL
COLLEGE

MACHINE TOOL TECHNICIAN

**Wisconsin Indianhead Technical College
32-420-1 Technical Diploma**

2015
Program Review

and

Improvement Plan

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Machine Tool Technician

32-420-1 Technical Diploma

Financial Aid Eligible

Program Overview

The two-year Machine Tool Technician program will prepare the student to operate and set up machine tools for the machining industry. The student will learn general machining skills based on the skills and knowledge identified by the Metalworking Industry Skill Standards Board. The student will learn production planning and quality control and how to use metallurgical equipment, perform precision measuring, use an engineer's handbook, and interpret prints. Computer-aided machining and programming techniques are emphasized.

Campus:

Superior



Admission Requirements

Students in this program must:

- Complete application form and submit with fee (fee waiver may apply if previously submitted)
- Complete Accuplacer entrance assessment to determine placement (waiver may apply with acceptable alternative test scores and/or postsecondary degree completion)
- Complete admissions interview with a WITC counselor (above requirements should be completed prior to interview)

Student Profile

Machine Tool Technician students should be able to:

- Solve math problems
- Visualize shapes and forms
- Problem solve
- Be detail oriented and take criticism
- Enjoy doing mechanical work
- Lift 25 pounds
- Assume responsibility
- Follow procedures carefully
- Manage their time
- Work well with others and under supervision

Preparation for Admission

Students should strive to reach a comfort level in the following courses or skills:

- Communications
- Mechanical Design
- General Metals/Welding
- Machine Shop
- Print Reading
- Principles of Technology
- Algebra
- Trigonometry
- Geometry
- Keyboarding
- Economics
- Physics

Program Outcomes

Employers will expect the Machine Tool Technician graduate to be able to:

- Apply basic safety practices in the machine shop
- Interpret industrial/engineering drawings
- Apply precision measuring methods to part inspection
- Perform basic machine tool equipment set up and operation
- Perform programming, set up, and operation of CNC machine tools
- Perform advanced CNC machining operations

Collegewide outcomes and indicators will also be addressed to develop personal awareness, career effectiveness, and professionalism. See page 5 of the college catalog for a list of collegewide outcomes and indicators.

Career Outlook

Graduates from the two-year Machine Tool Technician program will be ready to start their careers as:

- Machine Tool Operators
- Apprentice Machinists
- Machine Setup Persons
- Tool Room Machinists
- CNC Machinists
- Maintenance Machinists
- CNC Programmers

Curriculum

Number	Course Title	Credits
Occupational Specific Courses		
32420300	Metrology	2
32420312	CNC Programming - Turning [▲]	2
32420313	CNC Turning Operations [▲]	2
32420315	CNC Programming - Milling [▲]	2
32420316	CNC Milling Operations [▲]	2
32420320	CAD/CAM Applications [▲]	2
32420332	Semi-Precision Machining	2
32420351	Print Reading for Machine Trades	2
32420353	Production Planning and Quality [▲]	2
32420360	Production Problems [▲]	2
32420361	Introduction to CAD/CAM	1
32420362	Milling Fundamentals	2
32420363	Turning Fundamentals	3
32420365	CNC Fundamentals	2
32420366	Milling Applications [▲]	3
32420367	Turning Applications [▲]	3
32420373	Production Machining 1 [▲]	5
32420374	Production Machining 2 (WBL) [▲]	5
32420375	Job Shop Machining 1 [▲]	4
32420376	Job Shop Machining 2 [▲]	4
32420399	Precision Grinding [▲]	<u>3</u>
		55
Occupational Supportive/General Studies Courses[§]		
32801361	Applied Communications 1	2
32801363	Applied Communications 2 [▲]	2
32804355	Math 355	3
32804364	Math 364 [▲]	2
32806300	Applied Materials Science	2
32809371	Applied Human Relations	<u>2</u>
		13
PROGRAM REQUIREMENTS		68

[▲] Requires a prerequisite and/or corequisite that must be completed with a grade point of 2.0 or better.
[§] See pages 41-43 for course descriptions.

Course Descriptions

(See pages 41-43 for General Studies course descriptions)

32420300

Metrology - Credits: 2

This course is for the beginner. The student will learn how to use semi-precision measuring tools such as steel rules, screw thread gauges, etc. The student will also learn how to use precision measuring instruments such as assorted micrometer types, go/no go plug gauges, go/no go thread gauges, assorted calipers, etc. To do this, the student will start out by going over the number systems (decimal and fraction). The student will learn how to read and write numbers in both systems. This is a very basic course, but it represents the foundation that machining rests on measurement.

32420312

CNC Programming - Turning - Credits: 2

Students will learn about program structure (startup, work, shutdown), and basic G-codes including variations caused by machine type and programmer style. They will write simple programs and edit prewritten programs in order to hone their skill. The goal will be to start out simple and move to programs that are both efficient and effective. **PREREQUISITE:** 32420365 CNC Fundamentals or consent of instructor.

32420313

CNC Turning Operations - Credits: 2

CNC turning centers produce many of the cylindrical shapes machined in production machine shops today. This course will include machine/control familiarization, machine startup procedures, program transfers, work holding preparation, tooling preparation, setting tooling offsets, and part origins. In addition, students learn how to run the first part including dry runs and making minor tool offset adjustments. **PREREQUISITE:** 32420365 CNC Fundamentals or consent of instructor.

32420315

CNC Programming - Milling - Credits: 2

Productive users of CNC machining centers benefit from the execution of effective and efficient CNC programs. Students will become familiar with frequently used G-codes and will be exposed to canned cycles. They will learn how to convert print specifications into CNC G-code format using linear and circular interpolation functions as well as utilizing the benefits of canned cycles for drilling, reaming, tapping, and boring holes. Programs will be entered and edited on personal computers and at the CNC Machining Center. **PREREQUISITE:** 32420365 CNC Fundamentals or consent of instructor.

32420316

CNC Milling Operations - Credits: 2

CNC machining centers will be utilized in this course for the production of machined parts. This course will include machine/control familiarization, machine startup procedures, program transfers, work-holding preparation, tooling preparation, setting tooling offsets, and part origins. In addition, students will learn how to run the first part including dry runs and making minor tool offset adjustments. **PREREQUISITE:** 32420365 CNC Fundamentals or consent of instructor.

32420320

CAD/CAM Applications - Credits: 2

Computer-Aided Design (CAD) and Computer-Assisted Manufacturing (CAM) have become standard tools used almost wherever CNC production in metalworking takes place. Students will use the CAD/CAM software to build geometry, tool and material libraries, and define cutting paths/patterns. Post-processing of these CAD/CAM files will generate CNC programs in machine-specific G-code format. **PREREQUISITE:** 32420361 Introduction to CAD/CAM or consent of instructor.

32420332

Semi-Precision Machining - Credits: 2

This course will consist of the major categories of safety, maintenance, saws, drills, and pedestal grinders. Basic theory and skills will be taught for each area. The machines and related theory are designed to address those areas that deal with semi-precision processes.

32420351

Print Reading for Machine Trades - Credits: 2

This course will cover the basic principles of print reading. The emphasis will be on interpreting lines and symbols in single- and multiple-view working drawings. Topics include print reading procedures, sketching, drawing changes, machine specifications, and the reading of prints in specialized areas including ANSI, ISO standards, and geometric dimensioning and tolerancing.

32420353

Production Planning and Quality - Credits: 2

This course is intended to develop the concepts of production planning for machined parts. The student will develop process plans for parts that will be machined in the Job Shop Machining class. The student will also develop a portfolio to document processes and quality assurance methods. **PREREQUISITES:** 32420366 Milling Applications, 32420367 Turning Applications, and 32420399 Precision Grinding.

32420360

Production Problems - Credits: 2

This course will introduce the elements involved in the manufacture of a product with emphasis on jig and fixture design. The course will also include information on manufacturing management styles and industrial organization. **PREREQUISITES:** 32420365 CNC Fundamentals, 32420366 Milling Applications, and 32420367 Turning Applications.

32420361

Introduction to CAD/CAM - Credits: 1

This course will introduce students to computer-aided drafting (CAD) and computer-aided machining (CAM). Students will use appropriate CAD software to prepare mechanical drawings. Students will be introduced to CAD/CAM equipment.

32420362

Milling Fundamentals - Credits: 2

This course covers the introduction to the milling machines. Emphasis is on knowing the machine parts, their function, and performing simple lathe operations. Introductory subjects such as related safety, maintenance, metal cutting theory, cutting tool, and work holding for the mill will be taught. Students will learn the basics of metal cutting on these machines so that when they get to CNC machines they can focus on the unique aspects of the computerized machine.

32420363

Turning Fundamentals - Credits: 3

This course is designed to teach the beginner how to use the manual engine lathes. Students will learn about lathes, associated processes, lathe tools, and related safety/maintenance issues. This course is a prerequisite to more advanced manual lathe courses and CNC courses. Students will learn the basics of metal cutting on these machines so that when they get to CNC machines they can focus on the unique aspects of the computerized machine.

32420365

CNC Fundamentals - Credits: 2

This course introduces the student to the development and editing of Computer Numerical Control (CNC) programs. The basic elements of CNC machine setup and operation are covered for the production of acceptable parts. Safety concerns are also addressed. Strongly recommend a basic understanding of algebra, geometry, and trigonometry.

32420366

Milling Applications - Credits: 3

This course is designed to teach the student to use the manual milling machine to perform more difficult milling operations. Students will learn about new tools and processes. This course is a prerequisite for the CNC courses. Students will reinforce and build upon what they've learned in the basic milling class so that when they get to CNC machines they can focus on the unique aspects of the computerized machine. **PREREQUISITE:** 32420362 Milling Fundamentals.

32420367

Turning Applications - Credits: 3

This course is designed to teach the student how to use the manual engine lathe for more advanced machining operations such as threads and tapers. Students will expand their knowledge of turning. They will learn about new lathes, procedures, and about the terminology that is associated with threads and tapers. This course is a prerequisite for the CNC courses. Students will reinforce and build upon what they have learned in the basic turning course so that when they get to CNC machines they can focus on the unique aspects of the computerized machine. **PREREQUISITE:** 32420363 Turning Fundamentals.

32420373

Production Machining 1 - Credits: 5

This course is intended to develop the advanced skills and knowledge needed for entry into a production machining environment. The student machinist will use knowledge and skills developed in previous study to solve production machining problems. Emphasis will be placed on machine elements and employee development and testing. **PREREQUISITES:** 32420366 Milling Applications, 32420367 Turning Applications, and 32420399 Precision Grinding.

32420374

Production Machining 2 (WBL) - Credits: 5

This course will continue to develop the advanced skills and knowledge needed for entry into a production machining environment. The student machinist will use knowledge and skills developed in previous study to solve production machining problems. Emphasis will be placed on the efficient manufacture of parts in higher quantities. This course will also serve as a work-based learning experience. **PREREQUISITES:** 32420366 Milling Applications, 32420367 Turning Applications, and 32420399 Precision Grinding.

32420375

Job Shop Machining 1 - Credits: 4

This course is intended to develop the skills and knowledge needed in a job shop environment. The student machinist will use knowledge and skills developed in previous study to solve typical job shop problems. **PREREQUISITES:** 32420366 Milling Applications, 32420367 Turning Applications, and 32420399 Precision Grinding.

32420376

Job Shop Machining 2 - Credits: 4

This course is intended to develop the advanced skills and knowledge needed in a job shop environment. The student machinist will use knowledge and skills developed in previous study to solve typical job shop problems. This course builds on Job Shop Machining 1 experiences and provides additional skills in cutting tool selection and material characteristics. **PREREQUISITES:** 32420366 Milling Applications, 32420367 Turning Applications, and 32420399 Precision Grinding.

32420399

Precision Grinding - Credits: 3

This course is designed to teach the student to use grinding machines. The student will learn about general grinding machine operations. They will learn how to set up surface grinders and perform basic surface grinding operations. The outcome achieved in this course is a familiarity with the grinding processes that have broad application in industry. **PREREQUISITES:** 32420362 Milling Fundamentals and 32420363 Turning Fundamentals.

Gainful employment information is available at this link: <http://www.witc.edu/pgmpages/machtool/career.htm>. This information is provided as a federal requirement in an effort to help students make informed decisions related to the costs and potential employment in a chosen field.

Graduate Employment Information

(WITC Graduate Survey Responses 2012-2013; for most recent data, go to [witc.edu](http://www.witc.edu))

Number of graduates	9	Number employed	6	% employed in WITC district	50%
Number of responses	6	Percent employed	100%	Range of yearly salary	\$25,582-\$45,299
Number available for employment	6	Employed in related field	5	Average yearly salary	\$36,352

career vision

800.243.9482

witc.edu

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TEAM MEMBERSHIP

ACADEMIC PROGRAM REVIEW PROFILE

Program Number & Name		
Machine Tool Technician 32-420-1		
Program Academic Dean	Title/Location	Phone and e-mail
Karen Hoglund	Academic Dean Ashland	Ext. 3138 Karen.hoglund@witc.edu
Team Lead(s)	Title/Location	Phone and e-mail
Jon Willoughby	Machine Tool Technician Faculty/Superior	Ext. 6332 Jon.willoughby@witc.edu
Paul Kalin	Machine Tool Technician Faculty/Superior	Ext. 6335 Paul.kalin@witc.edu
Team Members	Title/Location	Phone and e-mail
Cindy Miller	Admissions Advisor Superior	Ext. 6243 cindy.miller@witc.edu
Scott Woerle	Advisory Committee Member/ Shop Supervisor – Genesis Mfg, Superior, WI	(715) 395-5252 swoerle@genesisattachments.com
Jeff Rosburg	2 nd Yr Student – Machine Tool Technician program	(218) 391-0020 rosburgig@my.witc.edu
Ingrid Evavold	General Studies Faculty Superior	Ext. 6343 Ingrid.evavold@witc.edu

Program Information:		
Capacity (new students admitted/year):		16
Number of Faculty:	FT: 2	PT:
Statewide Curriculum:	Yes?	No? X
Number of Technical Studies Courses in each of the following delivery modes: (there may be duplication for courses offered in multiple modes)		
	<i>Classroom:</i>	21
	<i>Online:</i>	0
	<i>ITV/IP:</i>	0
	<i>In Person/Web Blended:</i>	0

Program Accredited by:	NA
Date of Last Accreditation	
Date of Next Accreditation	
Is a visit required? If so, when is the next visit?	
Program Licensed by:	NA
Date of Last Licensing:	
Date of Next Licensing:	
Is a visit required? If so, when is the next visit?	
Please list other program memberships:	
	Arrowhead Manufacturers & Fabricators Association (AMFA)

SELF-STUDY REPORT

SELF-STUDY SUMMARY REPORT

Program Information	
Program Name: Machine Tool Technician	Team Chair: Jon Willoughby/Paul Kalin
Academic Dean: Karen Hoglund	Divisional Dean: Randy Deli
Process Used to Complete the Self-Study	
Meeting format (in-person, IP, conference calls etc.)	In person – Superior Campus
Number of meetings	1
How was the self-study handled? (as a group, assigned to individuals to report back to group, etc.)	The self-study was handled as a group.
Additional comments:	
Summary of Findings	
As you completed this self study section of the program review, what areas "stand out" in your program? Please explain.	Placement after graduation is very good, near or at 100%. This is due to our reputation as a quality school, well rounded advisory committee, state of the art facilities/equipment, relationship building with employers, building relationships with community.
What has surprised you? Please explain.	
List two or three of the items identified through your self-study that you will focus on to make improvements to your program.	Productions Problems and Production Planning courses to be more project-based. Currently being taught as a lecture course. Inviting high school tech instructors to committee meetings for networking.
When/where in your program will you implement these improvements?	Production Problems and Production Planning – Spring 2016 Inviting HS tech ed instructors to advisory committee meetings Fall 2015.
What methods (direct or indirect) will you use to assess the success of this implementation?	Portfolio that each student will create to take with them to interviews. Attendance at advisory committee meetings.
What new outcomes or benchmarks do you hope to achieve through these recommended changes?	Portfolio that each student will create to take with them to interviews. Increase relationships and partnerships with high school faculty.

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Review of Most Recent Program Review	
PLUSES (Strengths)	DELTAS (Opportunities)
Had a good team with the right players Manageable team size Program statistics continue to be strong Strong advisory committee Overall QRP statistics good Accomplished all of our action items Graduate placement is at 100% Job market is excellent	Not a consistent way to perform assessment
Select one PLUS item and explain the root cause:	The experience from the first time around taught us the best way to do this and the best people participating (Had a good team with the right players.) Team leader was instrumental to getting the right players at the table.
Select one DELTA item and explain the root cause:	Not a consistent way to perform assessment between instructors due to the variety of assessment tools to assess student performance. While each instructor evaluates the effectiveness of the assessment tools they use, currently there is not an assessment plan that is reviewed annually.
What items in this category MUST be addressed on our improvement plan?	There is nothing we must do other than to keep up recruitment efforts and course offerings with the area high school students.
What items in this category MIGHT be addressed on the improvement plan?	TSA that is being implemented by the state will address the assessment issue.
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	

Team Rating

Please indicate by an (X) the team rating of your program on this category.

<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: WITC Program Statistics	
PLUSES (Strengths)	DELTAS (Opportunities)
High school relationships Northwestern course Superior High course being taught South Shore Placement after graduation is very good, near or at 100% FTEs are consistent Graduate satisfaction is 100% Manufacturers Revealed State of the art labs with reputable instructors.	Incoming students are not at capacity Craig's List Newspaper want ads section Social media Refer a friend Fee waivers Strengthen high school relationships Drummond Northwoods (Minong) Add employer satisfaction statistics to program review. Increase non-traditional enrollment. Businesses supporting tuition reimbursement.
Select one PLUS item and explain the root cause:	Placement after graduation is very good, near or at 100%. Reputation as a quality school. Well rounded advisory committee. Facilities/equipment. Relationship building with employers. Building relationships with community.
Select one DELTA item and explain the root cause:	Incoming students are not at capacity. Traditional & narrow recruitment, i.e. newspaper ads. Marketing efforts supported by college resources/college partnerships.
What items in this category MUST be addressed on our improvement plan?	Increase incoming enrollment including high school relationships.
What items in this category MIGHT be addressed on the improvement plan?	Non-traditional recruitment.
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	State of the art labs with reputable instructors.

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Curriculum	
PLUSES (Strengths)	DELTAS (Opportunities)
<p>There is a CNC Machining Certificate in addition to the program that is offered to students with previous machining experience.</p> <p>Based on NIMS Metalworking standards.</p> <p>Curriculum satisfies or exceeds the needs of employers.</p> <p>Completed three phases of state Technical Skills Attainment (TSA). Data is being collected via a TSA Scoring Guide.</p> <p>TSA is being implemented through project-based assessment.</p> <p>The catalog page reflects the accurate program outcomes which have been approved by the advisory committee members.</p>	<p>Program page updates in notes area.</p> <p>Create a multi-axis certificate.</p> <p>Obtain NIMS certification.</p> <p>Investigate the possibility of modifying the curriculum sequence to accommodate applicants who don't meet the entrance requirements in math and communications using a conditional admit process. Provide developmental coursework along with program specific courses.</p> <p>Make sure WIDS course outcome summaries are the most current. Changes have been made and are not reflected on the WIDS COS's. i.e. Intro to CAD/CAM.</p>
Select one PLUS item and explain the root cause:	<p>Curriculum satisfies or exceeds the needs of employers.</p> <p>Curriculum has kept pace with industry and technology changes.</p>
Select one DELTA item and explain the root cause:	<p>Create a multi-axis certificate.</p> <p>Investigate the possibility of modifying the curriculum sequence to accommodate applicants who don't meet the entrance requirements in math and communications using a conditional admit process. Provide developmental coursework along with program specific courses.</p> <p>There's a large population of applicants who want to learn the machine tool trade but don't have the accommodations to allow them to enter the program.</p>
What items in this category MUST be addressed on our improvement plan?	<p>Curriculum sequence modification to accommodate applicants who don't meet the entrance requirements in math and communications using a conditional admit process. Provide developmental coursework along with program specific courses.</p>
What items in this category MIGHT be addressed on the improvement plan?	<p>Create a multi-axis certificate.</p>
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	<p>Curriculum satisfies or exceeds the needs of employers.</p>

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			
<p>Need to address the poundage requirement on the Student Profile on the program page – change wording of bullet point “lift 25 pounds”.</p> <p>Student Preparation for Admission on catalog page – Change the wording of Algebra, Trigonometry, and Geometry to “Solve applied math problems”.</p> <p>Change wording in Student Profile on catalog page to “Solve applied math problems”.</p>			

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Assessment of Student Learning	
PLUSES (Strengths)	DELTAS (Opportunities)
<p>TSA is in place and implemented.</p> <p>We facilitate problem-solving, creative thinking, critical thinking.</p> <p>All of our assessments are project-based. Students (self-assessment techniques) complete quality check sheets for each project. Form, fit, and function.</p> <p>We not only meet our course and program outcomes, but we consistently exceed them.</p> <p>Portfolios are being used to assess and demonstrate student learning. These can be taken to job interviews.</p>	<p>Productions Problems and Production Planning courses to be more project-based. Currently being taught as a lecture course.</p>
<p>Select one PLUS item and explain the root cause:</p>	<p>We facilitate problem-solving, creative thinking, critical thinking.</p> <p>To adapt to changing market needs. To be successful on the job.</p>
<p>Select one DELTA item and explain the root cause:</p>	<p>Productions Problems and Production Planning courses to be more project-based. Currently being taught as a lecture course.</p> <p>To make them as relevant as they can be. To meet changing market needs.</p>
<p>What items in this category MUST be addressed on our improvement plan?</p>	<p>Productions Problems and Production Planning courses to be more project-based. Currently being taught as a lecture course.</p>
<p>What items in this category MIGHT be addressed on the improvement plan?</p>	
<p>What items in this category may be considered a BEST PRACTICE OR INNOVATION?</p>	<p>Portfolios are being used to assess and demonstrate student learning. These can be taken to job interviews.</p>

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			

SELF-STUDY CATEGORY RESULTS

Program and Category			
Program: Machine Tool Technician Category: Advisory Committees			
PLUSES (Strengths)		DELTAS (Opportunities)	
Membership has been revised with rotating members and chair. Past graduates who are now employers are requesting membership on the advisory committee. We have a diverse group of committee members. Advisory meetings are well attended. Advisory committee members are active and engaged.		Inviting high school tech instructors to committee meetings for networking. Find a way to identify high school students for potential in trades programs.	
Select one PLUS item and explain the root cause:	Advisory committee members are active and engaged. They have a vested interest in program success.		
Select one DELTA item and explain the root cause:	Inviting high school tech instructors to committee meetings for networking. To assist high school tech ed instructors to build their programs to feed into our program.		
What items in this category MUST be addressed on our improvement plan?	Inviting high school tech instructors to committee meetings for networking.		
What items in this category MIGHT be addressed on the improvement plan?			
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	Past graduates who are now employers are requesting membership on the advisory committee.		
Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i>Exemplary—all areas exceed expectations—use as a model for other programs</i>
			X

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Equipment and Facilities	
PLUSES (Strengths)	DELTAS (Opportunities)
<p>Our equipment has kept pace with machine technology changes.</p> <p>Our facility is clean, well-organized, and maintained.</p> <p>Currently training on four unique CNC control systems.</p>	<p>The lab space is disjointed and could facilitate better learning with an improved facility. Additional and properly designed lab space aids in recruitment and learning.</p> <p>Opportunity to create a new space that would showcase industry standards allowing additional space for robotics.</p> <p>Clean, well-lit. open-concept. Opportunity for a multi-axis certificate.</p> <p>Opportunity to become a FANUC educational certification center.</p> <p>Opportunity to become recognized as a FANUC educational training center.</p>
Select one PLUS item and explain the root cause:	<p>Our equipment has kept pace with machine technology changes.</p> <p>Collaboration with advisory committee, instructors, and deans to facilitate changes.</p>
Select one DELTA item and explain the root cause:	<p>Opportunity to become a FANUC educational certification center.</p> <p>To meet the needs of our local industries. Students ready to work. Make us more competitive.</p>
What items in this category MUST be addressed on our improvement plan?	<p>Begin the process to become recognized as a FANUC educational training center through an expansion to begin summer 2017.</p>
What items in this category MIGHT be addressed on the improvement plan?	<p>Opportunity to create a new space that would showcase industry standards allowing additional space for robotics.</p>
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	<p>Our equipment has kept pace with machine technology changes.</p>

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Staff Development and Program Innovation	
PLUSES (Strengths)	DELTAS (Opportunities)
<p>We have well-versed and competent instructors willing to listen to industry needs.</p> <p>Instructors are constantly striving to exceed the previously set benchmarks.</p> <p>Instructors have added skill sets such as Solid Works and Geometric Dimensioning & Tolerancing to better serve industry needs.</p> <p>Instructors and students tour machining companies to learn best practices.</p>	<p>Opportunity to become a FANUC educational certification center. This will require instructor training.</p> <p>Online facilitation course. Safety training.</p> <p>Continuous education to serve industry needs.</p> <p>PC-DMIS coordinate measuring machine (CMM) programming language training.</p> <p>Geometric dimensioning & tolerance (GD&T) training.</p> <p>Instructors to attend IMTS (International Manufacturing Technology Show).</p>
<p>Select one PLUS item and explain the root cause:</p>	<p>Instructors are constantly striving to exceed the previously set benchmarks.</p> <p>Instructors care and have support from staff within the college all working towards a common goal.</p>
<p>Select one DELTA item and explain the root cause:</p>	<p>Continuous education to serve industry needs.</p> <p>To keep us competitive and innovative.</p>
<p>What items in this category MUST be addressed on our improvement plan?</p>	<p>Online facilitation course. Safety training.</p>
<p>What items in this category MIGHT be addressed on the improvement plan?</p>	
<p>What items in this category may be considered a BEST PRACTICE OR INNOVATION?</p>	<p>Instructors have added skill sets such as Solid Works and Geometric Dimensioning & Tolerancing to better serve industry needs.</p>

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			

SELF-STUDY CATEGORY RESULTS

Program and Category	
Program: Machine Tool Technician Category: Collaboration Across the College	
PLUSES (Strengths)	DELTAS (Opportunities)
<p>Collaboration with general studies instructors is strong.</p> <p>Transparency is created between general studies and program courses.</p> <p>Strong collaboration with admissions staff regarding class shadowing, tours, college events, and other student services.</p> <p>Collaborate with communications instructors to work on industry-related communications, i.e. resumes.</p> <p>Continue registration event efforts.</p> <p>Collaboration with high school instructors.</p> <p>Have set up a transcribed credit course with Chetek High School.</p> <p>Work with continuing education department to develop industry-needed classes/contracts.</p>	<p>Opportunity to use collaboration with general studies to bring shop applications into math classes to give students a deeper understanding of the importance of general studies courses.</p> <p>Opportunity for admissions staff (admissions advisor, career specialist, marketing) to join industry tours.</p> <p>Opportunity to collaborate with human relations instructors to work on industry-related work settings/issues, i.e. work place scenarios.</p> <p>Increase marketing efforts.</p> <p>Opportunity for the registrar to collaborate with the credit for prior learning staff to make the transfer process smoother.</p> <p>Collaboration with high school instructors.</p> <p>Opportunity to create and continue relationships with industry whenever possible.</p>
Select one PLUS item and explain the root cause:	Collaboration with general studies instructors is strong. Shared desire for student success.
Select one DELTA item and explain the root cause:	Opportunity for admissions staff (admissions advisor, career specialist, marketing) to join industry tours. To establish a depth of program understanding.
What items in this category MUST be addressed on our improvement plan?	Increase marketing efforts.
What items in this category MIGHT be addressed on the improvement plan?	
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	Transparency is created between general studies and program courses.

Team Rating			
Please indicate by an (X) the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i>Exemplary—all areas exceed expectations—use as a model for other programs</i>
		X	
Additional Comments: (optional)			

WITC QRP & PERKINS DATA REVIEW

QRP SCORECARD

32-420-1 – Machine Tool Technician

WTCS State Indicator	2014				
	Total In Cohort	Total Achieved	Actual	WITC Threshold	WITC Target
C200 Course Completion	26	23	88.4%	52.8%	100%
C400 Special Populations Course Completion	19	16	84.2%	38.5%	100%
C600 Minority Course Completion	1	1	100%	NA	100%
F200 Second Year Retention	17	10	58.8%	27.9%	96.4%
F400 Third Year Retention	11	9	81.8%	30.9%	81.3%
F600 Third Year Graduation	11	9	81.8%	16.1%	78.6%
F800 Fifth Year Graduation	25	16	64%	10.2%	65.8%
I300 Job Placement - All Employment	6	6	100%	62.9%	100%
I600 Job Placement - Related Employment	6	5	83.3%	13.0%	100%
J500 Non-Traditional Gender	26	0	0%	NA	43.8%
J650 NTO Graduation	11	0	0%	NA	38.9%

WTCS State Indicator	2013			2012		
	Total in Cohort	Total Achieved	Actual	Total in Cohort	Total Achieved	Actual
C200 Course Completion	27	22	81.4%	25	24	96%
C400 Special Populations Course Completion	22	17	77.2%	18	17	94.4%
C600 Minority Course Completion	1	1	100%	2	2	100%
F200 Second Year Retention	11	9	81.8%	11	10	90.9%
F400 Third Year Retention	11	7	63.6%	25	17	68%
F600 Third Year Graduation	11	7	63.6%	25	16	64%
F800 Fifth Year Graduation	18	11	61.1%	21	14	66.6%
I300 Job Placement - All Employment	5	5	100%	15	15	100%
I600 Job Placement - Related Employment	5	5	100%	15	13	86.6%
J500 Non-Traditional Gender	27	2	7.4%	25	2	8%
J650 NTO Graduation	8	0	0%	10	1	10%

Perkins Program Data

32-420-1 Machine Tool Technician																						
	1P1			1P2			2P1			3P1			2P1 + 3P1	4P1			5P1			5P2		
	# of PS	# of S/N	82.22%	# of PS	# of S/N	83.71%	# of PS	# of S/N	55.00%	# of PS	# of S/N	11.28%	66.28%	# of PS	# of S/N	90.41%	# of PS	# of S/N	8.91%	# of PS	# of S/N	7.44%
2015	12	11	91.67%	12	11	91.67%	12	8	66.67%	12	0	0.00%	66.67%	8	8	100.00%	18	0	0.00%	9	0	0.00%
2014	9	8	88.89%	9	7	77.78%	9	8	88.89%	9	1	11.11%	100.00%	4	4	100.00%	29	0	0.00%	11	0	0.00%
2013	8	6	75.00%	8	5	62.50%	8	4	50.00%	8	0	0.00%	50.00%	13	11	84.62%	28	2	7.14%	8	0	0.00%
2012	20	17	85.00%	20	12	60.00%	20	13	65.00%	20	1	5.00%	70.00%	11	11	100.00%	25	2	8.00%	10	1	10.00%
2011	13	11	84.62%	13	8	61.54%	13	11	84.62%	13	0	0.00%	84.62%	12	11	91.67%	32	2	6.25%	15	0	0.00%
5 Year Average			83.38%			65.46%			72.13%			4.03%	76.16%			94.07%			5.35%			2.50%

Terminology	Definition
FAUPL or NPL or PL	Percentage benchmark the program must meet or exceed.
Total N	The number of students in the cohort of the specified year listed.
# of PS	# of participants served (base # of students in the cohort)
# of S/N	# of students in the cohort that completed (# of students out of the base # in the cohort that successfully completed the program)
1P1	Program technical course completion percentage.
1P2	Program general studies course completion percentage.
2P1	Program degree attainment percentage.
3P1	Program retention/transfer percentage.
2P1 + 3P1	Degree attainment + retention percentage.
4P1	Job placement percentage reported at six-month graduate survey.

WTCS QRP SCORECARD ANALYSIS WORKSHEET

Program:	Machine Tool Technician 32-420-1			
Target Analysis				
Indicator	Actual	Threshold	Target	Best Practice or Innovation – Describe and include how this has contributed to your high actual results for this indicator.
I300 Job Placement	100%	62.9%	100%	The target of job placement is high but in this field there is many more jobs than graduates so anyone that wants to work can get a job in this field.
C600 Minority Course Completion	100%	N/A	100%	WITC offers a warm and inclusive atmosphere for minority students to succeed.
Threshold Analysis				
Indicator	Actual	Threshold	Target	Potential Action – Describe what action(s) could possibly be taken to improve this indicator and why it might work.
C400 Special Population Course Completion	83.7%	38.5%	100%	It's above the threshold but far below the target. This is due to the ability of students to job out after the first year.
F200 Second Year Retention	58.8%	27.9%	96.4%	Even though the percentage is above the threshold it is below the target. Reasoning is due to the job out possibilities that exist in industry.

WTCS PERKINS SCORECARD ANALYSIS WORKSHEET

Program:	Machine Tool Technician 32-420-1			
Indicator	Actual	Benchmark	Not met (X)	What practices might be causing this performance and what potential actions could be taken to improve this score?
1P1 Technical Course Completion	88.89%	75.18%		Class sizes are small and instructor expresses the importance of attendance for success. Students make each other accountable to be present. Students have high interest in the program they are studying and it is very hands-on and relevant to their interests.
1P2 Academic (General Studies) Course Completion	77.78%	68.40%		Students need general studies courses to graduate from their program. Instructors work closely with general studies instructors to make the material apply to the program of study.
2P1 Degree Attainment (Completion)	88.89%	57.50%		It's a short 1-yr hands-on program that is very appealing to most students making it easy to complete.
3P1 Retention/ Transfer	11.11%	16.78	X	Students that don't complete tend to be the students that job out or who do not pass their general studies coursework. Transfer opportunities are constantly being developed state-wide making this trend increase over the upcoming years.
2P1+3P1	10%	74.28%		Students don't pay the graduation fee to complete their program.
4P1 Placement (6-month survey)	100%	92.00%		This is a high demand field and students have no problems obtaining employment. Difficulty is keeping them until their degree is finished. Only 92% because statistics are based on students returning a survey which they don't all do despite the instructor efforts to tell them the importance of the results.

FUTURE TRENDS AND EXTERNAL FACTORS

Program	Machine Tool Technician 32-420-1
Future Trends	
•	One of the major trends in the machining industry is multi axis machining. Multi-axis machines that include turning and milling operations as well as simultaneous 5-axis machining. These multi-axis machines allow you to produce multiple part designs and achieve higher production volumes in fewer setups. It combines operations onto one machine, decreasing labor costs and producing a better quality product in less time.
•	
Employment Trends	
Local	
•	Local manufacturing employment trends in the greater Twin Ports area is very good. Machine shops are actively hiring or plan to in the near future. The long term trends are very good. As the wave of Baby Boomers retire over the next ten years they will have to be replaced.
State	
•	Machine shops are actively hiring or plan to in the near future. The long term trends are very good.
•	
External Factors	
•	A negative effect on manufacturing industries is the lack of qualified machinists available for hire. The only ones available for hire are the Technical College graduates each spring, all others are currently employed.
•	The steady economy over the last 5 years has had a positive effect on manufacturing industries.
•	

IMPROVEMENT PLAN

ACADEMIC PROGRAM IMPROVEMENT PLAN

-PROGRAM: Machine Tool Technician 32-420-1					
Defined Outcome: Improve high school relations by creating high school articulation/transcripted credit agreements.	QRP Indicator #	Perkins Indicator #	Responsibility	Timeline	Resources
Action Plan/Action Items: Invite 4 area high schools to visit the WITC lab. Offer high school tech ed workshop February 2 - job shadowing day for high school students.			Instructors, Curriculum Office	Spring 2016 – Spring 2018	High school administration, curriculum office

Update: (A mid-year and year-end update will be required each year during implementation.)

June 2016:

Area high schools from Superior and Northwestern were invited and visited the lab. Instructors offered an evening high school teacher workshop to allow Tech Ed instructors to visit the lab and make projects using our equipment. Feb 2 held a job shadowing day for high school students and it went well.

January 2017:

Over the last year, we have had Two Harbors, Northwestern, Spooner & Superior High school students shadow the program. WITC machine tool instructors have worked with the Northwestern High School instructor to help develop their metal working courses at the high school. The Northwestern High School instructor frequently visits the WITC lab.

Offer High school tech ed workshop

- Late in the summer of 2016 we held a four day Facilitating the Future Machine Tool workshop for High school Instructors. They built multiple parts using the vertical milling machine, engine lathe and a Haas CNC milling machine.
- We have another two Machine Tool workshops set up for the summer of 2017.

June 2017:

Paul will be working with the new instructor, Laurence Chevclair at Northwestern to get him up to speed on the agreement between WITC and Northwestern. Joe Letko took a teaching position at another high school. Laurence is new to Northwestern but not to Machine Tool. He, along with 5 other high school tech ed instructors, will be taking the Machine Tool tech ed summer training July 10-14 at WITC Ashland to ensure his skills are up to date. The training will include Vertical milling machine, engine lathe and Haas CNC milling machine. They will build multiple parts in this one week condensed class. Paul taught another tech ed class for Superior tech ed instructors the end of June. It was very successful and the high school teachers are very appreciative of the opportunity to come and work in our newly remodeled Machine Tool labs.

January 2018:

- We have another HS Tech Ed workshop scheduled for the summer of 2018.
- Paul attended a HS Manufacturing meeting at Northwestern HS in the fall of 2017. It included Instructors from all the local HS and Industry representatives.
- Paul joined Northwestern's FabLab advisory council. One of his duties will include promoting the program to the community.
- We spent time working with South Shore HS technology Instructor Dave Johnson on his manufacturing curriculum and tooling.

ACADEMIC PROGRAM IMPROVEMENT PLAN

PROGRAM:	Machine Tool Technician 32-420-1				
Defined Outcome: Increase student retention by 10%	QRP Indicator #	Perkins Indicator #	Responsibility	Timeline	Resources
	F200	3P1			
Action Plan/Action Items: Align program course sequence to accommodate applicants who don't meet entrance requirements. Work with Student Services with the possibility of adding a conditional admit process. Schedule classes around developmental course availability. Determine appropriate reading levels of courses.			Dean, Instructor, Manager of Enrollment Services, Curriculum Director	Fall 2017 – Spring 2018	Curriculum Director, Manager of Enrollment Services

Update: *(A mid-year and year-end update will be required each year during implementation.)*

June 2016:

Program course sequencing and program catalog numbers have been aligned with Ashland so it will be a seamless transition from the one-year program into the Superior two year program. Entrance testing will no longer be used for program acceptance only for course placement.

January 2017:

A spring 2017 admittance time has brought in 4-5 new students to begin the program. Our efforts to integrate them in to the full 2-year program will be achieved by modifying a few classes Paul Kalin teaches to allow a spring start. All trade and technical diploma programs are accepting students into the program at the college minimum admission scores. Reading levels of current texts have not yet been determined.

June 2017:

The program course sequence has been modified so students can enter every semester instead of just once a year with creative scheduling for the out of sequence students. The students are now exempt testing for program acceptance. The scores are only used for course placement in math and writing courses. Classes have been successfully scheduled around developmental courses. Since all testing requirements will be eliminated there is no need to research reading levels for students that are coming in fall 2017.

January 2018:

Nothing more to report.

ACADEMIC PROGRAM IMPROVEMENT PLAN

PROGRAM:	Machine Tool Technician 32-420-1				
Defined Outcome: Update various courses to include at least 4 projects	QRP Indicator #	Perkins Indicator #	Responsibility	Timeline	Resources
	C200	1P1			
Action Plan/Action Items: Update Syllabus to reflect changes to courses. Implement portfolio within the program to meet TSA standards.			Instructor, Dean, Curriculum Director, Curriculum developer	Fall 2015 – Fall 2016	Curriculum Director, Curriculum developer
Update: (A mid-year and year-end update will be required each year during implementation.) June 2016: Syllabi is currently being updated to make changes and include 4 projects that align with the portfolio requirement that will meet TSA requirements. January 2017: Completed June 2017: Nothing more to report January 2018 Nothing more to report					

ACADEMIC PROGRAM IMPROVEMENT PLAN

ROGRAM:	Machine Tool Technician 32-420-1				
Defined Outcome: Invite high school tech-ed instructors and students to advisory committee meeting.	QRP Indicator #	Perkins Indicator #	Responsibility	Timeline	Resources
Action Plan/Action Items: Update annually			Instructor	Spring 2016	
<p>Update: (A mid-year and year-end update will be required each year during implementation.)</p> <p>June 2016: High school Tech Ed instructors were invited and represented at the fall 2015 advisory committee meeting. Input was very valuable to the group.</p> <p>January 2017: This will continue for each year.</p> <p>June 2017: The new instructor, Laurence Chavalier will be invited to join our advisory committee for the fall term.</p> <p>January 2018: Nothing more to report.</p>					

ACADEMIC PROGRAM IMPROVEMENT PLAN

PROGRAM:	Machine Tool Technician 32-420-1				
Defined Outcome: Expand Machine Tool Lab to accommodate more FANUC machines to begin the process to become recognized as a FANUC Education Training Center.	QRP Indicator #	Perkins Indicator #	Responsibility	Timeline	Resources
Action Plan/Action Items: Construction project – Summer 2016 Purchase additional FANUC machines through the major equipment planning process. Obtain membership with FANUC to become a center of excellence. Market to industry partners.			Instructors, Marketing department	Fall 2016 – Spring 2018	Marketing department

Update: *(A mid-year and year-end update will be required each year during implementation.)*

June 2016:

Paul and Jon will be attending the FANUC certification training in July 2016.

Construction project started in May 2016 and will be completed by August 2016 for a full renovation of the MTT lab with the inclusion of new FANUC machines to align with the certification requirements of becoming a FANUC center of excellence. After renovation there is an open house being marketed to display the new labs and market our programs with the center of excellence at the forefront of our marketing efforts.

January 2017:

Construction was completed in August 2016 and FANUC machines were added to the lab. Paul and Jon did attend training and obtained membership with FANUC to become a center of excellence.

June 2017:

The 3rd of 3 FANUC machines were added to the lab. Superior is officially FANUC certified and has become a center of excellence so our instructors are able to teach industry people in short term trainings. Marketing will take place in 2017-18 school year.

January 2018:

A fourth Fanuc machine was added to the lab this year. A second fourth axis has been requested for a Fanuc machine. The community is becoming aware that we can do Fanuc training through the Advisory committee meetings and open house tours. It is now possible to do some custom Fanuc Training through Mr. Glazman.