



Cycle: 2018-2021

ASSOCIATE IN APPLIED SCIENCE WITH A MAJOR IN MACHINE TOOL TECHNOLOGY

Program Mission Statement:

The Machine Tool Technology program is designed to teach manufacturing processes and methods using both manual and computer-controlled machine tools. Basic skills will be developed on a variety of machine tools such as lathes, milling machines, Wire EDM and Computer Numerical Control (CNC) machines. Employment opportunities include machinist, tool inspector, and tool and die maker, methods technician, manufacturing process technician, quality and production control technician.

Division: TECHNICAL AND GENERAL EDUCATION

AVP: Dan Averette

Department Chair: SHAWN REED

Director:

SACSCOC Standard: 8.2A

Accrediting Agency: Yes No

Program Student Learning Outcome	Monitoring Year
Create the digital geometry necessary for machine programming.	2018-2019
Interpret blueprint information and translate it into actionable items.	2019-2020
Perform setup and operation of manual machines, such as band saw, lathe, mill, and drill press.	2019-2020
Apply industry standard safety practices and specific safety requirements for different machining operations	2020-2021
Calculate necessary tolerances to plan for the machine sequences.	2020-2021
Inspect the produced part to ensure completion per blueprint requirement.	2020-2021
Perform basic and advanced setup and operation of a CNC lathe and CNC mill.	2020-2021

Name:

NA

Certification Exam(s): Yes No

Agency Name:

Credential:

STUDENT LEARNING OUTCOMES FOR 48.0501 – 2018-2019

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Create the digital geometry necessary for machine programming.	MTT 251	Students identify the proper G and M codes related to the basic programming of Computer Numerical Control (CNC) machines (MTT 251).	80% of the students will pass the G & M code test with a score of 70% or greater.	Fall 2018	11 out of 12 students (91.7%) passed the G & M code test with a score of 70% or greater. Class average was 91%.	The expected learning level was met. The MTT faculty has decided to reinforce G and M Codes by allowing students to spend more time on programming the CNC machines.

STUDENT LEARNING OUTCOMES FOR 48.0501 -- 2019-2020

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Interpret blueprint information and translate it into actionable items.	MTT 250	Students prepare a program to contour a simple part on a CNC mill.	100% of students will make a grade of 70% or above on G02-G03 mill block.	Summer 2020	8 out of 8 students (100%) passed the project with a 70% or above. Class average on this project was a 97%.	The expected learning level was met and the faculty will continue to evaluate this learning outcomes with other classes that deal with CNC programming.

STUDENT LEARNING OUTCOMES FOR 48.0501-2019-2020

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Perform setup and operation of manual machines, such as band saw, lathe, mill, and drill press.	MTT 112	MTT Degree students will demonstrate basic operations on the mill.	100% of MTT degree students will make a grade of 70% or better on pass/fail mill block.	Spring 2020	9 out 11 students (81.8%) made a 70% or above on this project. Class average on this project was an 80% with 2 students who did not make the required 70% or above.	The expected learning outcome was not met. The MTT faculty determined the students needed extra time on the machine and part alignment to help ensure the tolerance of 0.002 of inch can be achieved on future projects.

STUDENT LEARNING OUTCOMES FOR 48.0501-2020-2021

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Apply industry standard safety practices and specific safety requirements for different machining operations.	MTT 111	All MTT students are required to take a safety test.	100% of MTT students will pass the safety test with a grade of 80% or above.	Fall 2020	9 out 9 students (100%) made a grade of 80% or above. Class average was 98.2%.	The expected learning level was met and the faculty will continue to evaluate this learning outcome with other classes, since safety is the most important outcome in the program.

STUDENT LEARNING OUTCOMES FOR 48.0501-2020-2021

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Calculate necessary tolerances to plan for the machine sequences.	MTT 113	Students perform advanced operation on the manual lathe.	100% of the students will make a 70% or higher on MTT 113 project Pass/Fail Lathe Chucking project.	Summer 2021	7 out of 11 students (63.6%) made a grade of 70% or higher. Class average was 63%.	The expected learning outcome was not met. The 4 students who did not meet the benchmark did not complete the course due to COVID-19 shut down. The faculty will encourage the students be more aware of time management.

STUDENT LEARNING OUTCOMES FOR 48.0501-2020-2021

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Inspect the produced part to ensure completion per blueprint requirement.	MTT 113	Students will setup the lathe and/or mill correctly and produce a first article that is accurate according to the blueprint.	100% of graduates will make a grade of 70% or higher on the Milling Cutter Arbor mill/lathe project in MTT 113.	Summer 2021	11 out of 11 students (100%) made a grade of 70% or higher on the Milling Cutter Arbor mill/lathe project in MTT 113. Class average 82.5%.	The expected learning level was met and the faculty will continue to evaluate the progress of insuring blueprint requirement.

STUDENT LEARNING OUTCOMES FOR 48.0501-2020-2021

A. Program Student Learning Outcomes	B. What courses are PSLOs Assessed	C. Methods for Outcomes Assessment	D. Expected Level of Program Performance	E. Data Collection	F. Results	G. Plan For Improvement
What should the graduates of your program be able to do?	Where do you see evidence that the student can do these things?	How does your program evaluate student/graduate skills/abilities?	What is the expected level of student performance <u>for the program</u> ?	When will you collect the data needed to evaluate the performance of the program?	What are the results of the evaluation? NOTE: include student ratio with all results.	How will you use this information to improve the program
Perform basic and advanced setup and operation of a CNC Machining Center	MTT 255	Student will utilize tools in the CAM library to produce a toolpath.	100% of the graduates will make a grade of 70% or higher on project 5 in MTT 255 class.	Spring 2021	7 of 7 students (100%) passed the required assignment with a 70% or above. Class average was 84%.	The expected learning level was met and the faculty will continue to evaluate the progress of students to utilize tools in the CAM library to produce a toolpath.

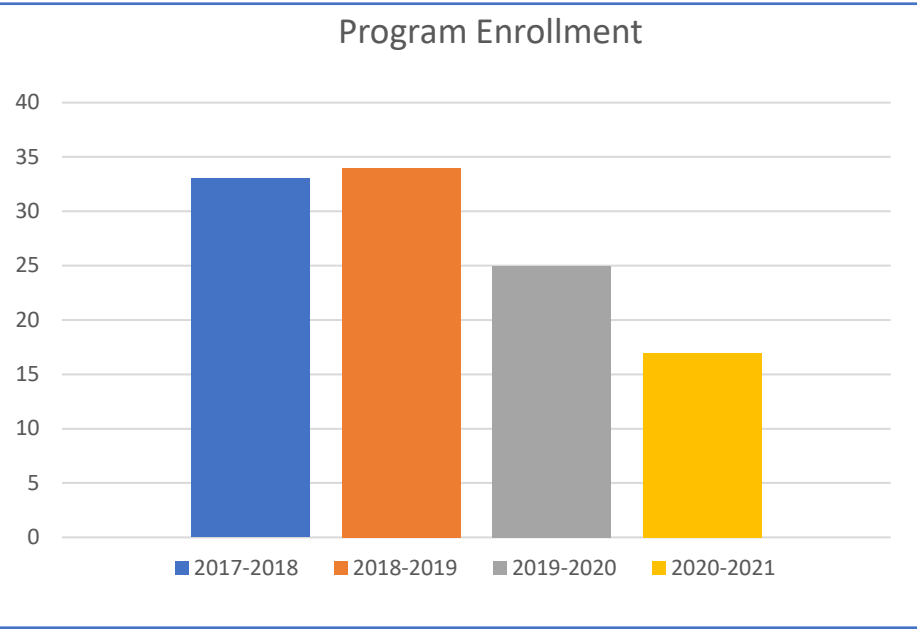
CONTINUOUS STUDENT IMPROVEMENT

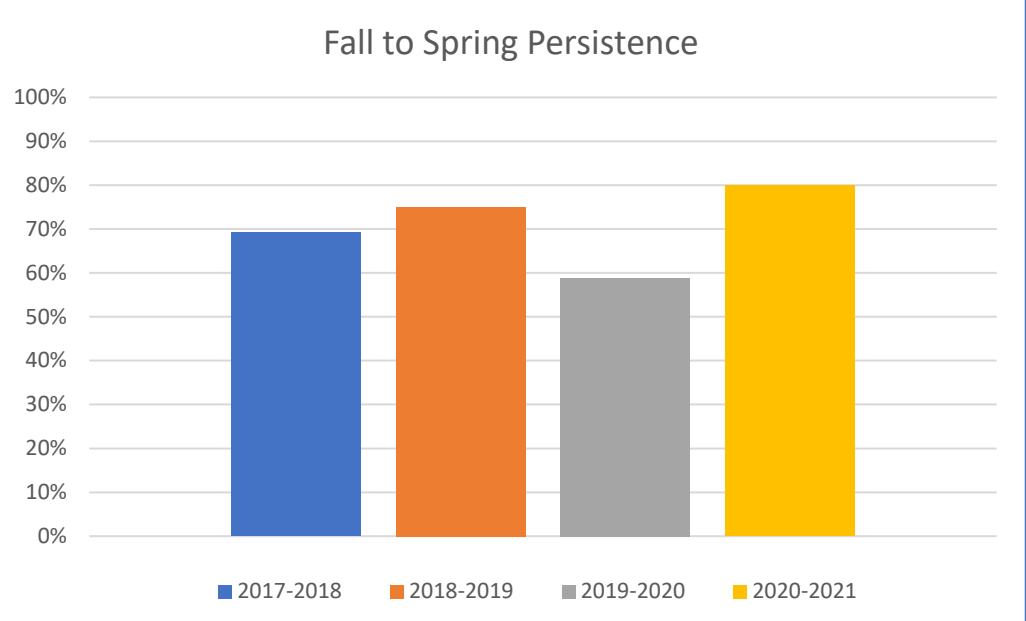
In comparison to the last cycle the MTT department has been able to identify a short fall in tracking student improvement. The faculty in this cycle has been focusing on more hands-on projects to evaluate student learning outcomes because they feel this approach gives them a more accurate method to determine mastery of the concepts.

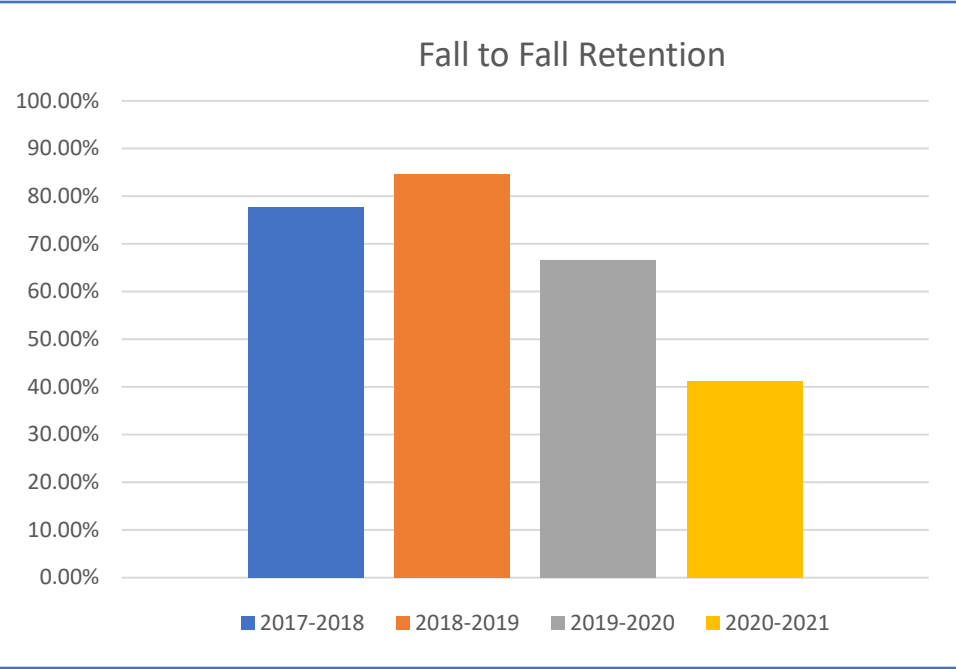
The program's one major short fall from last cycle would be in the MTT 113 class' pass/fail projects. The students did struggle with holding tolerances to blueprint specifications which could be attributed to limited understanding on how the machine and material conditions affects the parts being made. The faculty has started to address this issue by requiring the students to inform the instructor the required steps of completing the project before the first attempt.

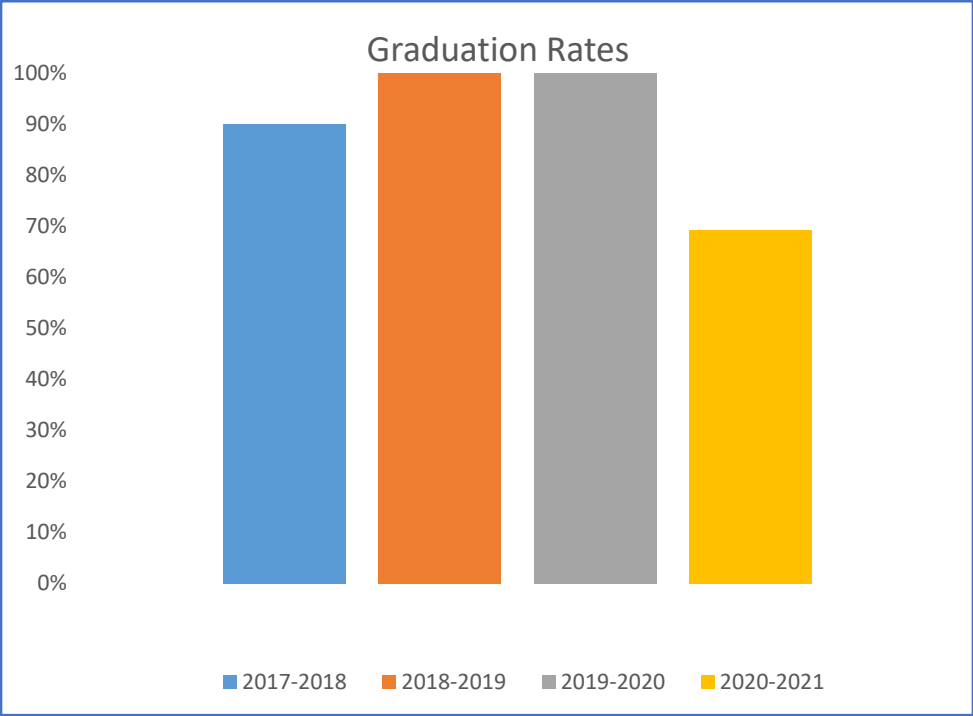
Overall, the MTT faculty feels that student performance will continue to improve. All the MTT students from these different cohorts are working in the field.

PROGRAM VITAL STATISTICS

Indicator	Trend Analysis	Action Plans										
<p style="text-align: center;">Program Enrollment</p>  <table border="1" data-bbox="113 175 1024 799"> <caption>Program Enrollment Data</caption> <thead> <tr> <th>Year</th> <th>Enrollment</th> </tr> </thead> <tbody> <tr> <td>2017-2018</td> <td>33</td> </tr> <tr> <td>2018-2019</td> <td>34</td> </tr> <tr> <td>2019-2020</td> <td>25</td> </tr> <tr> <td>2020-2021</td> <td>17</td> </tr> </tbody> </table>	Year	Enrollment	2017-2018	33	2018-2019	34	2019-2020	25	2020-2021	17	<p>Enrollment has been fluctuating over the last few years due to changes in the labor market. The program saw an increase in enrollment in 2018-2019 because of a new company that partnered with us with an apprenticeship program. The decline took place due to COVID-19 and issues with aerospace parts in 2019-2020. The program has 4 other certificates and a diploma whose numbers are not represented in this graph.</p>	<p>The program is expecting to see an increase its enrollment back to the 2018-2019 numbers because of the restart of the apprenticeship program and other new industries coming to the area.</p>
Year	Enrollment											
2017-2018	33											
2018-2019	34											
2019-2020	25											
2020-2021	17											

Indicator	Trend Analysis	Action Plans										
<p style="text-align: center;">Fall to Spring Persistence</p>  <table border="1" data-bbox="115 162 1134 779"> <caption>Fall to Spring Persistence Data</caption> <thead> <tr> <th>Academic Year</th> <th>Persistence Rate</th> </tr> </thead> <tbody> <tr> <td>2017-2018</td> <td>70%</td> </tr> <tr> <td>2018-2019</td> <td>75%</td> </tr> <tr> <td>2019-2020</td> <td>60%</td> </tr> <tr> <td>2020-2021</td> <td>80%</td> </tr> </tbody> </table>	Academic Year	Persistence Rate	2017-2018	70%	2018-2019	75%	2019-2020	60%	2020-2021	80%	<p>The persistence rate has remained steady with a dip in the 2019-2020 academic year.</p>	<p>The program faculty has started an open lab tutoring time on Friday mornings to help 1st year Fall students who have fallen behind on the completion of shop projects.</p>
Academic Year	Persistence Rate											
2017-2018	70%											
2018-2019	75%											
2019-2020	60%											
2020-2021	80%											

Indicator	Trend Analysis	Action Plans										
<p style="text-align: center;">Fall to Fall Retention</p>  <table border="1" data-bbox="113 152 1062 816"> <caption>Fall to Fall Retention Data</caption> <thead> <tr> <th>Year</th> <th>Retention Rate</th> </tr> </thead> <tbody> <tr> <td>2017-2018</td> <td>78.00%</td> </tr> <tr> <td>2018-2019</td> <td>85.00%</td> </tr> <tr> <td>2019-2020</td> <td>67.00%</td> </tr> <tr> <td>2020-2021</td> <td>41.00%</td> </tr> </tbody> </table>	Year	Retention Rate	2017-2018	78.00%	2018-2019	85.00%	2019-2020	67.00%	2020-2021	41.00%	<p>The retention rate was affected by the same influences as the enrollment rate.</p>	<p>Restart the apprenticeship program with local industries, which in turn, should increase the retention rate.</p>
Year	Retention Rate											
2017-2018	78.00%											
2018-2019	85.00%											
2019-2020	67.00%											
2020-2021	41.00%											

Indicator	Trend Analysis	Action Plans										
<p style="text-align: center;">Graduation Rates</p>  <table border="1" data-bbox="109 162 1075 873"> <caption>Graduation Rates Data</caption> <thead> <tr> <th>Year</th> <th>Graduation Rate</th> </tr> </thead> <tbody> <tr> <td>2017-2018</td> <td>90%</td> </tr> <tr> <td>2018-2019</td> <td>100%</td> </tr> <tr> <td>2019-2020</td> <td>100%</td> </tr> <tr> <td>2020-2021</td> <td>70%</td> </tr> </tbody> </table>	Year	Graduation Rate	2017-2018	90%	2018-2019	100%	2019-2020	100%	2020-2021	70%	<p>The graduation rate indicators are a little misleading since students may start in one of our 5 other MTT programs and then change programs to the degree.</p>	<p>The department will make sure the Change of Major forms are done in a timely manner.</p>
Year	Graduation Rate											
2017-2018	90%											
2018-2019	100%											
2019-2020	100%											
2020-2021	70%											

Indicator	Trend Analysis	Action Plans								
<p style="text-align: center;">Job Placement Rates</p> <table border="1" style="margin-top: 10px;"> <caption>Job Placement Rates Data</caption> <thead> <tr> <th>Year</th> <th>Placement Rate</th> </tr> </thead> <tbody> <tr> <td>2017-2018</td> <td>100%</td> </tr> <tr> <td>2018-2019</td> <td>100%</td> </tr> <tr> <td>2019-2020</td> <td>100%</td> </tr> </tbody> </table>	Year	Placement Rate	2017-2018	100%	2018-2019	100%	2019-2020	100%	<p>The MTT program has always had a very high placement rate due to the great relationship we have with local industries. Most of the companies hire our students while they are still in the first year.</p>	<p>The department will continue to work with local industry to insure placement of our graduates.</p>
Year	Placement Rate									
2017-2018	100%									
2018-2019	100%									
2019-2020	100%									