

## Program Information Report

### Manufacturing & Automotive

#### Advanced Manufacturing (CNC) - Operation Technician (CTMTOT) Certificate

Program Effective Term: Fall 2022

In this program, students learn to setup and operate CNC machine tools with an introduction to programming. They learn how to use basic measurement tools and read blueprints. This certificate will highlight the fundamentals of manufacturing and measurement. Students completing this certificate will be able to safely perform basic skills within a manufacturing facility, including basic part manufacturing as well as the setup and operation of CNC machine tools to manufacture basic parts. Students will also be able to perform basic inspections using appropriate measurement tools.

Students with technology interests who enjoy working with their hands like gaming, manipulating code, robotics, 3D printing are suited for this line of work.

Major/Area Requirements		(18 credits)
MEC 100	Materials and Processes	3
MEC 101	Blueprint Reading for Manufacturing	2
NCT 100	Foundation Concepts for Manufacturing (CNC)	3
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
NCT 120	Introduction to 2D CAD CAM Programming and Applications	2
NCT 121	Manual Programming and NC Tool Operation	4

**Minimum Credits Required for the Program: 18**

## WASHTENAW COMMUNITY COLLEGE

## PROGRAM CHANGE FORM

<b>Program Code: CTMTSO</b>	<b>Current Program Name: Machine Tool Setup and Operation</b>	<b>Effective Term: Fall 2022</b>
<b>Division Code: ATP</b>	<b>Department: Advanced Manufacturing</b>	

**Directions:**

1. Attach the current program listing from the WCC catalog or website and indicate any changes to be made.
2. Draw lines through any text that should be deleted and write in additions. Extensive narrative changes can be included on a separate sheet.
3. Check the boxes below for each type of change being proposed. Changes to courses, discontinuing a course, or adding new courses as part of the proposed program change, must be approved separately using CurricUNET, but should be submitted at the same time as the program change form.
4. If changes affect the program assessment plan or if program outcomes are updated, please submit a [Program Assessment Plan Change](#) form. These changes must be approved separately from the program change form and should be submitted at the same time. Current program assessment plans can be found on the [Curriculum and Assessment Program Information page](#).

**Requested Changes:**

- Remove course(s): MTT102, MTT111, MEC 201
- Add course(s): NCT 100, NCT120, NCT 121
- Program title (new title is Advanced Manufacturing (CNC) – Operation Technician)

- Description
- Advisors
- Program admission requirements
- Continuing eligibility requirements

- Program outcomes (may also result from removing or adding a course)\*
- Program assessment plan\*
- Accreditation information
- Other \_\_\_\_\_

Note: A change to the Award Type requires the submission of a new program proposal form and a separate program inactivation form. Contact the Director of Curriculum & Assessment for more information.

**Show all changes on the catalog page you attach.**

\* Please submit a [Program Assessment Plan Change](#) form.

**Rationale for proposed changes:**

Creation of embedded certificates into AAS APETEC to allow students to obtain credentials along their AAS path. Assessment plan revised to remove traditional machine tool language.

**Financial/staffing/equipment/space implications:****List departments that have been consulted regarding their use of this program.**

N/A

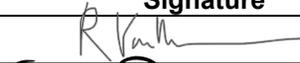
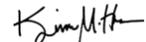
**Signatures:**

Reviewer	Print Name	Signature	Date
Initiator	Allan Coleman	<i>Allan Coleman</i>	12/15/2021
Department Chair	Allan Coleman	<i>Allan Coleman</i>	01/17/2022
Division Dean/Administrator	Jimmie Baber	<i>Jimmie Baber</i>	1/21/2022

**Please return completed form to the Office of Curriculum & Assessment, SC 257 or by e-mail to [curriculum.assessment@wccnet.edu](mailto:curriculum.assessment@wccnet.edu)**

Once reviewed by the appropriate faculty committees we will secure the signature of the VPI and President.

PROGRAM CHANGE FORM

Reviewer	Print Name	Signature	Date
Curriculum Committee Chair	Randy Van Wagnen		2-15-2022
Assessment Committee Chair	Shawn Deron		3/03/2022
Vice President for Instruction	Kimberly Hurns		

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Reviewed by C&A Committees 2/3/22

## Program Information Report

CTMTSD

### School of Advanced Manufacturing Systems

Whether your interest is in manufacturing or automation, the programs in the School of Advanced Manufacturing Systems will fit your needs. Maintain and troubleshoot the machines that make commercial goods by specializing in one or more aspects of the machining industry. Develop entry level or advanced skills in electronics, automation hydraulics or numerical controls.

Washtenaw Community College offers programs at several levels for students who want to begin new careers, or advance in their existing careers. The first level is the certificate, which can vary from nine to thirty-six credits, depending on the field. Certificates generally prepare students for entry-level jobs.

After completing a certificate, students can progress to the next level, the advanced certificate. The credit hours required for these programs also vary. This type of certificate provides a more specialized level of skill development, and often allows students to upgrade their positions at their places of employment.

The next level, an Associate in Applied Science, is available for some programs. For some career fields, it is possible to earn a certificate, advanced certificate, and an Associate in Applied Science degree in the same field. In these cases, the credit hours from the certificate and advanced certificate can be applied to the credit hours needed for the Associate in Applied Science degree.

Alternatively, students can earn an AAS in Occupational Studies by completing a certificate, an advanced certificate (if one exists) and General Education requirements.

### Machine Tool

Learn about machining operations through the production of parts using WCC's extensive machine tool laboratory.

**Program Information Report**

**Machine Tool Setup and Operation (CTMTSO)**

**Certificate**

**Program Effective Term: Fall 2015**

In this program, students learn to setup and operate CNC machine tools, traditional mills, lathes, and saws. They learn how to use basic measurement tools and read blueprints. This certificate will highlight the fundamentals of materials and processes including mechanical and physical testing and heat treatment of ferrous and non-ferrous metals. Students completing this certificate will be able to perform many of the fundamental tasks within a fabrication shop, including simple part manufacturing, set-up and operation of CNC machine tools as well as inspection using simple measurement tools.

MEC 100	Materials and Processes	3
MEC 101	3D Modeling and Blueprint Reading	2
MEC 201	Mechanisms	2
MTT 102	Machining for Auto Applications	2
MTT 111	Machine Shop Theory and Practice	4
NCT 101	Introduction to Computerized Machining (CNC) - I	2
NCT 110	Introduction to Computerized Machining (CNC) - II	2
<b>Minimum Credits Required for the Program:</b>		<b>17</b>

**PROGRAM PROPOSAL FORM**

- Preliminary Approval** – Check here when using this form for preliminary approval of a program proposal, and respond to the items in general terms.
- Final Approval** – Check here when completing this form after the Vice President for Instruction has given preliminary approval to a program proposal. For final approval, complete information must be provided for each item.

<p><b>Program Name:</b></p> <p><b>Division and Department:</b></p> <p><b>Type of Award:</b></p> <p><b>Effective Term/Year:</b></p> <p><b>Initiator:</b></p>	<p>Machine Tool Setup and Operation</p> <p><u>Advanced Technology and Public Services Careers/ Industrial Technology</u> Department</p> <p><input type="checkbox"/> AA   <input type="checkbox"/> AS   <input type="checkbox"/> AAS  <input checked="" type="checkbox"/> Cert.   <input type="checkbox"/> Adv. Cert.   <input type="checkbox"/> Post-Assoc. Cert.   <input type="checkbox"/> Cert. of Comp.</p> <p>Fall 2015</p> <p>Jeff Donahey/Thomas Penird</p>	<p><b>Program Code:</b></p> <p><b>CIP Code:</b></p>
<p><b>Program Features</b>                  Program's purpose and its goals.                  Criteria for entry into the program, along with projected enrollment figures.                  Connection to other WCC programs, as well as accrediting agencies or professional organizations.                  Special features of the program.</p>	<p>In this certificate, students are taught how to read blueprints, visualize models in 3D space, understand materials processes and testing, and recognize the fundamentals of machine tools. In addition, measurement techniques and the setup and operation of CNC machine tools will be practiced. The student will be able to go into a local manufacturing company and operate a traditional or CNC machine tool, as well as do operations like heat treating, testing, and measurement of product.</p>	
<p><b>Need</b>                  Need for the program with evidence to support the stated need.</p>	<p>Many of our students are only here to get specific training required by local industry. This is reflected in our completion numbers.</p> <p>Several students have asked for certification.</p> <p>Local employers would like the certification as in indication of the level of skill sets the potential employee has attained.</p> <p>We have eliminated the machine tool technology program from the Mechatronics (Formerly Automation) program. The MTT111 class needs to be associated with a program to aid in enrollment.</p>	
<p><b>Program Outcomes/Assessment</b>                  State the knowledge to be gained, skills to be learned, and attitudes to be developed by students in the program.                  Include assessment methods that will be used to determine the effectiveness of the program.</p>	<p><u>Outcomes</u></p> <ol style="list-style-type: none"> <li>1. Setup and operate CNC mills and lathes.</li> <li>2. Operate traditional mills, lathes, and saws.</li> <li>3. Read and interpret blueprint abbreviations, symbols and dimensions.</li> <li>4. Measure parts using core measurement devices such as micrometers, calipers, rules, go-no gages, protractors and optical comparators.</li> </ol>	<p><u>Assessment method</u></p> <ol style="list-style-type: none"> <li>1. Capstone Projects</li> <li>2. Capstone Projects</li> <li>3. Test</li> <li>4. Tests</li> </ol>

Office of Curriculum & Assessment  
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<p><b>Curriculum</b></p> <p>List the courses in the program as they should appear in the catalog. List minimum credits required. Include any notes that should appear below the course list.</p>	<p style="text-align: center;">29</p> <p>MEC100 3 credits Materials and Processes X  MEC101 2 credits 3D Modeling and Blueprint Reading X  MEC 201 2 credits Mechanisms  MTT 102 2 credits Machining for Automotive applications  MTT 111 4 credits Machine Shop Theory and Practice  NCT 101 2 credits Introduction to Computerized Machining (CNC I)  NCT 110 <u>2 credits</u> Introduction to Computerized Machining (CNC II)  17 credits</p> <p><b>Note: These are all existing courses</b></p>																					
<p><b>Budget</b></p> <p>Specify program costs in the following areas, per academic year:</p>	<table border="1"> <thead> <tr> <th></th> <th>START-UP COSTS</th> <th>ONGOING COSTS</th> </tr> </thead> <tbody> <tr> <td><b>Faculty</b></td> <td>\$ 0.0</td> <td>\$ .</td> </tr> <tr> <td><b>Training/Travel</b></td> <td>0.0</td> <td>.</td> </tr> <tr> <td><b>Materials/Resources</b></td> <td>.</td> <td>.</td> </tr> <tr> <td><b>Facilities/Equipment</b></td> <td>.</td> <td>.</td> </tr> <tr> <td><b>Other</b></td> <td>.</td> <td>.</td> </tr> <tr> <td style="text-align: right;"><b>TOTALS:</b></td> <td>\$ .</td> <td>\$ .</td> </tr> </tbody> </table>		START-UP COSTS	ONGOING COSTS	<b>Faculty</b>	\$ 0.0	\$ .	<b>Training/Travel</b>	0.0	.	<b>Materials/Resources</b>	.	.	<b>Facilities/Equipment</b>	.	.	<b>Other</b>	.	.	<b>TOTALS:</b>	\$ .	\$ .
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<p><b>Program Description for Catalog and Web site</b></p>	<p>In this program, students learn to setup and operate CNC machine tools, traditional mills, lathes and saws. They learn how to use basic measurement tools and read blueprints. This certificate will highlight the fundamentals of materials and processes including mechanical and physical testing and heat treatment of ferrous and non-ferrous metals. Students completing this certificate will be able to perform many of the fundamental tasks within a fabrication shop, including simple part manufacturing, set-up and operation of CNC machine tools as well as inspection using simple measurement tools.</p>																					
<p><b>Program Information</b></p>	<p><b>Accreditation/Licensure -</b>  <b>Advisors -</b>  <b>Advisory Committee -</b>  Norgren: Mike Rodocker, Josh Jeffers  Zero Hour Parts: Brandon Hoag, Debra Adams, MS PHR  Faurecia: Wes Nichols  Mechanized Numerics LLC: Andrew Dubuc  L&amp;W Engineering: David Braun  Jacobs Technologies: Ed Grabow  Heller Precision Machining: Jason Barnhart, Chris Wehrle</p> <p><b>Admission requirements -</b>  <b>Articulation agreements -</b>  <b>Continuing eligibility requirements -</b></p>																					

**Assessment plan:**

Program outcomes to be assessed	Assessment tool	When assessment will take place	Courses/other populations	Number students to be assessed
1. Setup and operate CNC mills and lathes.	Capstone Project	Fall 2015	NCT 110	All
2. Operate traditional mills, lathes, and saws.	Capstone Projects	Fall 2015	MTT 111	All
3. Read and interpret blueprint abbreviations, symbols and dimensions.	Test	Fall 2015	MEC101	All
4. Measure parts using core measurement devices such as micrometers, calipers, rules, go-no gages, protractors and optical comparators.	Test	Fall 2015	MTT 111	All

**Scoring and analysis plan:**

- Indicate how the above assessment(s) will be scored and evaluated (e.g. departmentally-developed rubric, external evaluation, other). Attach the rubric.  
  
Outcomes 1 and 2: Department-developed rubric  
Outcomes 3 and 4: Answer Key
- Indicate the standard of success to be used for this assessment.  
75% of the students will score 70% or better on each outcome.
- Indicate who will score and analyze the data.  
Department Faculty

REVIEWER	PRINT NAME	SIGNATURE	DATE
Department Chair/Area Director	Thomas	Penird	1/6/2015
Dean	Brandon	Tucker	1/6/15
Vice President for Instruction <input type="checkbox"/> Approved for Development <input type="checkbox"/> Final Approval	William Abernethy		2/5/15
President	Rose Bellanca	Rose Bellanca	2/23/15
Board Approval			3/24/15