



**Applied Science and Engineering Technology Division**

**2019-2020**

The associate of applied science degree with specialization in product and process technology is designed to prepare students for careers in high-performance manufacturing of consumer goods. This degree will provide students with a foundation in manufacturing design, precision machining and tooling, and complex computer-aided design and computer-aided manufacturing (CAD/CAM). Students will learn tooling process and equipment requirements, design, analysis and process planning and also receive instruction in manual and computer-numerical-control (CNC) mills, machining centers, lathes, grinders, robotic integration and support processes, procedures and practices. This program is focused on beginner, intermediate and advanced levels of the product and process. Students will learn “soft” skills in problem solving, teamwork and communication. Students can graduate with real world skills to be productive in CNC and CAD CAM.

**NOTE: MCCC is a FANUC Certified Education Training Center.**

**Career Opportunities**

Graduates of this program will be prepared to pursue careers in the product and process technology field such as:

- Automation and control technician analyst
- CAD/CAM technician
- CNC programmer/operator
- CNC set-up technician
- Engineering technician
- Industrial engineer production team leader
- Machine technician
- Machinist



- Manufacturing technician
- Process planner lab technician
- Sales and service engineer

*Note: The following codes identify courses that satisfy MCCC's General Education Requirements:*

(C1) GE Natural Sciences Competency  
 (C2) GE Mathematics Competency  
 (C3) GE Writing Competency  
 (C4) GE Computer Literacy Competency  
 (C5) GE Human Experience Competency  
 (C6) GE Social Systems Competency



<b>Required General Education Courses</b>	<b>Credits</b>
C1 PHY 101 (Technical Physics) or PHY 151 (General Physics I) or CHEM 150 (Fundamental Principles of Chemistry) or CHEM 151 (General College Chemistry I) . . . . .	4
C2 MATH 124* (Technical Mathematics II) or competency . . . . .	4
C3 ENGL 151 (English Composition I) . . . . .	3
C4 MDTC 160 (Mechanical Drafting CAD I) . . . . .	4
C5 Expressions of the Human Experience Competency . . . . .	3
C6 Social Systems Competency . . . . .	3

*See the General Education Requirements on the MCCC website for a list of courses that satisfy the General Education Learning Competencies.*

## Required Core Courses

Credits  
47-49

### 1<sup>st</sup> Semester

MECH 102 (Manufacturing Processes) . . . . .	4
MECH 103 (Machining Basics and CNC) . . . . .	4
MDTC 160 (Mechanical Drafting and CAD I) . . . . .	C4
MATH 119* (Elementary Technical Mathematics) . . . . .	2

### 2<sup>nd</sup> Semester

ELEC 125 (Fundamentals of Electricity) . . . . .	3
MATL 101 (Industrial Materials) . . . . .	3
MECH 104 (CNC II) . . . . .	3
MECH 201 (CAD/CAM I) . . . . .	3
MATH 124* (Technical Mathematics II) . . . . .	C2

### 3<sup>rd</sup> Semester

MECH 131 (Introduction to Automated Manufacturing) . . . . .	3
MECH 105 (CNC III) . . . . .	3
MECH 221 (CAD/CAM II) . . . . .	3
MDTC 226 (Geometric Dimensioning and Tolerancing) . . . . .	3
Restricted Electives . . . . .	3-4

### 4<sup>th</sup> Semester

METC 220 (Statics & Strength of Materials) . . . . .	4
MECH 231 (CAD/CAM III) . . . . .	3
Restricted Electives . . . . .	3-4

## Restricted Electives List (select two)

QSTC 150 (Introduction to Metrology) . . . . .	3
METC 170 (Introduction to Parametric CAD/CATIA) . . . . .	3
WELD 100 (Introduction to Welding Processes) . . . . .	4
MDTC 228 (Introduction to Solid Modeling – SOLIDWORKS) . . . . .	3

**Total Degree Requirements 68-70 credits**

**Total Degree Cost 84 minimum billable contact hours**

\* Program requires at least 6 credit hours of MATH. MATH 119 (Elementary Technical Mathematics) and MATH 124 (Technical Mathematics II) are required for students whose goal is to complete the associate of applied science degree and seek employment. MATH 157 (College Algebra) and MATH 159 (Trigonometry and Analytical Geometry) are recommended for students interested in transferring to a four-year institution. Other MATH courses may be selected for transfer depending on the student's choice of transfer institution. Students interested in transfer are encouraged to seek the assistance of a faculty advisor or admissions counselor.

## Certificate Program: Product and Process Technology

In addition to the two-year associate degree program, Monroe County Community College offers a certificate program in product and process technology. We recognize that many employers place value on a certificate which authenticates specialized educational preparation. The program concentrates upon basic core courses with skill development and job upgrading being the primary objectives. All courses taken in the certificate program are applicable toward the associate of applied science degree. Certificates give students the absolute competitive edge in the product and process environment.

## Certificate: CNC Technician\*

	Credits
MECH 103 (Machining Basics and CNC) . . . . .	4
MECH 104 (CNC II) . . . . .	3
MECH 105 (CNC III) . . . . .	3
MECH 201 (CAD/CAM I) . . . . .	3
MDTC 160 (Mechanical Drafting and CAD I) . . . . .	4

**Total Certificate Requirements 17 credits**

**Total Certificate Cost 24 minimum billable contact hours**

\* FANUC Education Training Certificate awarded upon successful completion of MECH 104 (CNC II) and MECH 105 (CNC III).

## Certificate: CAD/CAM Technician

	Credits
MECH 103 (Machining Basics and CNC) . . . . .	4
MECH 201 (CAD/CAM I) . . . . .	3
MECH 221 (CAD/CAM II) . . . . .	3
MECH 231 (CAD/CAM III) . . . . .	3
MDTC 160 (Mechanical Drafting and CAD I) . . . . .	4

**Total Certificate Requirements 17 credits**

**Total Certificate Cost 24 minimum billable contact hours**

Monroe County Community College is an equal opportunity institution and adheres to a policy that no qualified person shall be discriminated against because of race, color, religion, national origin or ancestry, age, gender, marital status, disability, genetic information, sexual orientation, gender identity/expression, height, weight or veteran's status in any program or activity for which it is responsible. If you have a disability and need special accommodations, please contact the Learning Assistance Laboratory at least 10 business days prior to the first class session to schedule an appointment to begin the accommodation process. The LAL phone number is 734.384.4167.

Monroe County Community College is accredited by the Higher Learning Commission.  
www.hlcommission.org / (800) 621-7440

Information contained within this document is subject to change. Every effort has been made to insure the information in this program sheet is accurate at the time of publication. This program sheet may not be considered as an agreement or contract.

### Main Campus

1555 South Raisinville Road  
Monroe, Michigan 48161  
734-242-7300 / 1-877-YES-MCCC

### Whitman Center

7777 Lewis Avenue  
Temperance, Michigan 48182  
734-847-0559

