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Manufacturing Technology - Applied Manufacturing Option - Associate in Science Program

Description

This resource includes the program narrative, curriculum grid, as well as course descriptions for all required courses in the program.

The goal of the Manufacturing Technology Applied Manufacturing Option is to prepare highly skilled technicians and front-line supervisory personnel for the advanced manufacturing workforce. This option is specifically designed to serve as an associate degree completion program for applicants who meet the criteria for admission to the program and can demonstrate successful completion of all aspects of the MA Manufacturing Extension Partnership CNC Machine Operator Skills Training & Advanced CNC Machine Operator Skills Training.

Industry:

[Advanced Manufacturing \(/taxonomy/term/14\)](#)

Program Area:

[Associated Degree \(/taxonomy/term/38\)](#)

Curriculum Area:

[Engineering \(/taxonomy/term/48\)](#)
[Technology \(/taxonomy/term/50\)](#)
[Other \(/taxonomy/term/55\)](#)

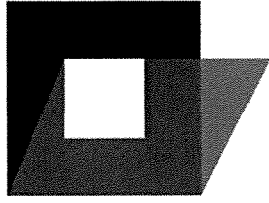
Resources

Applied Manufacturing Program Narrative and Grid PDF | 172 KB [DOWNLOAD](#)
[HTTP://OERMACC.EDC.ORG/SITES/OERMACC.EDC.ORG/FILES/2014/07/20MANUFACTURING%20-%20GRID%20AND%20NARRATIVE.pdf](http://oermacc.edc.org/sites/oermacc.edc.org/files/2014/07/20MANUFACTURING%20-%20GRID%20AND%20NARRATIVE.pdf)

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Audience:
[Instructor \(/taxonomy/term/15\)](#)
[Coordinators \(/taxonomy/term/17\)](#)

Campus or Organization:
[Quinsigamond Community College \(/campus/quinsigamond-community-college\)](#)

Developer(s)/Author(s):
 Lee Duerden



QUINSIGAMOND

Community College

Manufacturing Technology – Applied Manufacturing Option – Associate in Science: Program Narrative & Grid

Author/Originator: Lee Duerden

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MANUFACTURING TECHNOLOGY - APPLIED MANUFACTURING OPTION**Program Goals**

The goal of the Manufacturing Technology Applied Manufacturing Option is to prepare highly skilled technicians and front-line supervisory personnel for the advanced manufacturing workforce. This option is specifically designed to serve as an associate degree completing program for applicants who meet the criteria for admission to the program and can demonstrate successful completion of all aspects of the MA Manufacturing Extension Partnership CNC Machine Operator Skills Training & Advanced CNC Machine Operator Skills Training.

Student Learning Outcomes

Upon completion of the program graduates will:

- Apply mathematical and scientific concepts to solve manufacturing problems.
- Use their knowledge of engineering principles to operate, troubleshoot, and maintain highly technical manufacturing equipment and integrated systems.
- Program, set up and operate sophisticated CNC machinery while maintaining safe working conditions and a structured approach to CNC programming methodology.
- Use industry recognized CAD/CAM software to prepare engineering drawings and build complex CNC programs.
- Apply advanced methods of analysis, synthesis, and control of production systems as they relate to lean production and automated process techniques.
- Integrate advanced methods of communication and maintain a professional approach to add value to a variety of manufacturing organizations through contextualized experience and applied technical knowledge.
- Understand and analyze modern quality systems to maintain and improve the production of goods and the processes that drive them.

Admissions Process

Admissions inquiries should be directed to admissions@gcc.mass.edu. Prospective students may apply to the program of their choice by following the enrollment steps at the following link: http://www.gcc.edu/pages/Enrollment_Steps.html.

Admissions Requirements

High School Diploma or GED/High School Equivalency

- Prospective applicants must hold a high school diploma or GED. In addition, applicants must submit the following certificate of completion:
- MACWIC Level 4 Certificate of Applied Manufacturing Technology.

This certificate documents successful completion of all classroom-based and on-the-job training hours related to content addressed in the following QCC courses: MNT 101, MNT 110, MNT 115, MNT 210 and MNT 215 as well as successful completion of a minimum of

600 additional apprentice hours (beyond the hours utilized to fulfill the requirements of the MNT course articulations).

Prospective applicants will work through QCC's Career Placement Services Office to credential the MMEP CNC Machine Operator Skills Training & Advanced CNC Machine Operator Skills Training. Please see the Additional Cost section for information regarding credentialing fees.

Additionally, prospective students should note that some required courses carry minimum prerequisites. Refer to the program grid.

Students should note that some first semester courses carry minimum prerequisites. Refer to the program grid.

CORI, SORI, Finger Printing & Drug Testing

A Criminal Offenders Record Information (CORI) and Sexual Offenders Record Information (SORI) are not required. Finger printing and drug testing are not required.

Additional Cost

See page 30 for program fees for this program. (Note: Not all programs have program fees).

Students are required to pay the current QCC credentialing fee for the 26 college credits granted through this agreement. Please see: <http://www.gcc.edu/services/experience-based-education/credentialing>

Location

This program may be completed at the QCC Worcester campus.

This program may be completed face-to-face.

This program may be completed more than 50% on-line.

Technical Performance Standards

See page 17 for technical standards for this program. (Note: Not all programs have technical performance standards).

Credit for Prior Learning

Students enrolled in this program may be able to earn academic credit for prior learning. Please contact the office of Career Placement Services at careerservices@gcc.mass.edu, 508.854.4439, Room 272 A.

Note: Applicants should note that 26 credits are being granted through articulation as per the terms of the agreement between MA Manufacturing Extension Partnership and QCC for this associate degree completion option. While students enrolled in this program may be able to earn additional academic credit for prior learning, it should be noted that a minimum of 15 credits must be completed at QCC in order to meet the residency requirement.

Career Outlook

Please consult The Massachusetts Career Information System at <http://masscis.infocareers.com/> or The Occupational Outlook Handbook at <http://www.bls.gov/oco/> for specific occupational information. The CIP code for this program is 15.0613.

Transfer Articulations & Opportunities

Prospective students may learn more about transfer articulation agreements at the following link: <http://www.qcc.mass.edu/transfer/ArticPathways.html>. More information regarding transfer opportunities is available at: <http://www.qcc.mass.edu/transfer> and on page 23.

Note: Applicants should note that credits granted through articulation as per the terms of the agreement between MA Manufacturing Extension Partnership and QCC may not be eligible for transfer to four-year colleges or universities. Applicants are advised to check with their transfer institution of choice regarding relevant transfer policies.

Program Contact: Manufacturing@qcc.mass.edu

Additional Program Information: For the most up to date information, go to the program website at www.QCC.edu.

MANUFACTURING TECHNOLOGY - APPLIED MANUFACTURING OPTION - Associate in Science (Program Code: MPA)

Course Title	Course #	Offered	Plan to Take	Grade	Credits	Prerequisites
Credentialed of MassMEP CNC Machine Operator Skills Training & Advanced CNC Machine Operator Skills Training as per articulation agreement						
Semester 1						
English Composition & Literature I	ENG 101	F/S/SU			3	ENG 100 or approp place score
Process Automation and Robotics	MNT 217	F			3	CIS 111, MNT 110
Mathematics Elective	--				3	
Social Science Elective	--				3	
Elective*	--				3-4	
Semester 2						
English Composition & Literature II	ENG 102	F/S/SU			3	ENG 101
Introduction to Business	MGT 101	F/S/SU			3	A grade of "C" or higher in ENG 091 and passing the ENG 096 departmental writing final examination essay or approp place score
Humanities Elective	--				3	
Mathematics Elective	--				3	
Science Elective	--				4	
Elective*	--				3-4	
Total Credits Required					60-62	

Program Notes:

*Elective: Students MUST select from the following list of courses:

- BUS 205 Project Management (3 credits)
- ENG 205 Technical & Workplace Writing (3 credits)
- MGT 211 Principles of Management (3 credits)
- MNT 103 Solid Modeling (3 credits)
- MNT 105 Geometric Tolerancing & Dimensioning (4 credits)
- MNT 216 Manufacturing Processes II (4 credits)
- MNT 218 Lean Manufacturing & Six Sigma (3 credits)

*Note: MAT 108 is designed to teach students how to apply mathematics to specific technical disciplines and is offered for credit toward the Certificate in Manufacturing Technology. MAT 108 may not be considered equivalent to college-level mathematics for the purpose of transfer of credit to some baccalaureate institutions. Students who plan to pursue QCC's Associate in Science in Manufacturing Technology are advised to take MAT 100.



Manufacturing Technology – Applied Manufacturing Option
Associate in Science
Course Descriptions

ENG 101 English Comp & Lit I

Credits: 3

Prerequisites: ENG 100

This course focuses on how to develop essential writing skills including organization, correctness, and support of ideas. A research project is required to produce a documented essay that integrates materials from Internet and traditional sources according to standard disciplinary format. Students develop and sharpen the interpretive and analytical skills necessary to evaluate the soundness and appropriateness of sources for their work.

ENG 102 English Comp & Lit II

Credits: 3

Prerequisites: ENG 101

This course employs literary texts to provide examples for students to continue and refine writing and reading skills. Assigned readings include plays, poems, novels, short stories, epic narratives, personal essays, and satire. Writing assignments emphasize students close reading skills and their interpretation and analysis of creative works.

MGT 101 Introduction to Business

Credits: 3

Prerequisites: A grade of "C" or higher in ENG 091 and passing the ENG 096 departmental writing final examination essay or appropriate placement score.

This course provides a broad overview of the business world. Students learn to apply basic business concepts and principles to a variety of business situations. Topics include business terminology, the legal forms of business organizations, the impact of the economy on business, and the basic functions of management including marketing, banking and financing, accounting, and technology.

MNT 217 Process Automation & Robotics

Credits: 3

Prerequisites: CIS 111, MNT110

This course provides students with an overview of the systems and concepts involved in today's highly automated manufacturing environments. Robotic systems, an important component of an automated system, are also studied. Topics include automation design, robotic systems, manufacturing execution systems (MES), statistical process control (SPC), and Visual Basic programming. Students learn and practice systematic troubleshooting, using a highly automated manufacturing system as well as robotic systems.

MT-AMO-AS

M.C.C.

SME Name

SME Email Address

SME Phone Number

Name of Material Reviewed

Syllabus, Course and/or Module Evaluation Rubric

1: Evident; 0: Not Evident; N/A = Not applicable

A. Syllabus

A1	Syllabus includes basic elements of the course (e.g., course title, credits, goals/objectives, learning outcomes, pre-requisites, course description)	0	1	N/A
A2	Course outcomes are clearly stated and aligned to occupational focus and industry standards.	0	1	N/A
A3	Course texts (required and optional) are listed on syllabus; supplementary materials and resources are provided if appropriate.	0	1	N/A
A4	Evidence of capstone assessment (licensure, industry certification, capstone project or TSA)	0	1	N/A
A5	Assessment methods, grading policies and scale, and/or other student measurement practices are described within the syllabus.	0	1	N/A
A6	The Course Outline/Schedule includes major topics, and activities.	0	1	N/A

Comments:

no syllabus

1: Evident; 0: Not Evident; N/A = Not applicable

B. Learner Objectives & Interaction

B1	The course learning objectives are measurable.	0	1	N/A
B2	Learning objectives are stated clearly and easily understood from the student's perspective.	0	1	N/A
B3	The learning objectives are appropriately designed for the level of the course.	0	1	N/A

Comments:

1: Evident; 0: Not Evident; N/A = Not applicable

C. Instructional Design

C1	The course organization and design is clear, coherent, and structured in an appropriate way.	0	1	N/A
C2	Concepts and skills build logically and purposefully throughout the course, with transitions to support development and understanding from skill to skill.	0	1	N/A

Comments:
*strong Design, are there examples to follow as best practice?
 common design throughout many certs & degrees*

1: Evident; 0: Not Evident; N/A = Not applicable

D. Instructional Materials

Specify which module or lab reviewed

D1	The instructional materials contribute to the achievement of the stated course objectives.	0	1	N/A
D2	The materials meet/reflect current industry practices and standards.	0	1	N/A
D3	The instructional materials are current.	0	1	N/A
D4	The learning activities and/or labs promote the achievement of the stated learning objectives.	0	1	N/A
D5	Learning activities and/or labs provide opportunities for interaction that support active learning.	0	1	N/A
D6	The module design organizes the course into stages of introduction, development, and assessment.	0	1	N/A
D7	The module includes learning objectives, activities, and all classroom materials for each session.	0	1	N/A

Comments:
no materials

1: Evident; 0: Not Evident; N/A = Not applicable

E. Assessment & Measurement

E1	The types of assessments selected measure the stated learning objectives and are consistent with module activities and resources.	0	1	N/A
E2	The assessment instruments selected are varied and appropriate to the student work being assessed.	0	1	N/A

Comments:

Follows C.C. standards

1: Evident; 0: Not Evident; N/A = Not applicable

F. Innovative or Enhanced Strategies

F1	Program/course/module reflects design or strategies that accelerate the time to completion.	0	1	N/A
	Program/course/module design or enhancements increase accessibility for lower-skilled students (e.g. those assessed at "pre-college" levels for English or math).	0	0	N/A
F2	Program/course/module design or enhancements are designed to improve retention and completion for adult learners. support the adult learner.	0	1	N/A

TOTAL

10

Is this program, course or module foundational, intermediate or advanced in terms of preparing students for employment in the specified industry? Please elaborate.

Yes, Program gives a basic foundation withing an existiny degree to explore manufacturing

Overall Comments:

I have found M.C.C. to have strong standards operating procedures.

A Great introduction to manufacturing for students to follow

in creating these programs