

January 2017

### Community College Creates Competency-Based Curricula with Industry-Recognized Credentials in Manufacturing/Mechatronics

- Responding to the identified skill needs of manufacturing employers
- Using a competency-based approach to develop curricula
- Preparing students to acquire credentials approved by the manufacturing industry

#### Introduction

Where there's a will, there's a way. Massachusetts employers need skilled workers to fill their job openings in many technical fields including advanced manufacturing and mechatronics occupations. Students and incumbent workers need to acquire employer-recognized competencies as well as postsecondary credentials to meet this demand.

Quinsigamond Community College (QCC) has developed an innovative approach to address these complementary needs. The college has embedded preparation for critical industry credentials within many of their technical degree and certificate programs such as manufacturing technology and electronics engineering technology/mechatronics curricula. Students emerge with both a degree or certificate and one or more industry-recognized credentials upon successful completion of their coursework.

#### Workforce Need

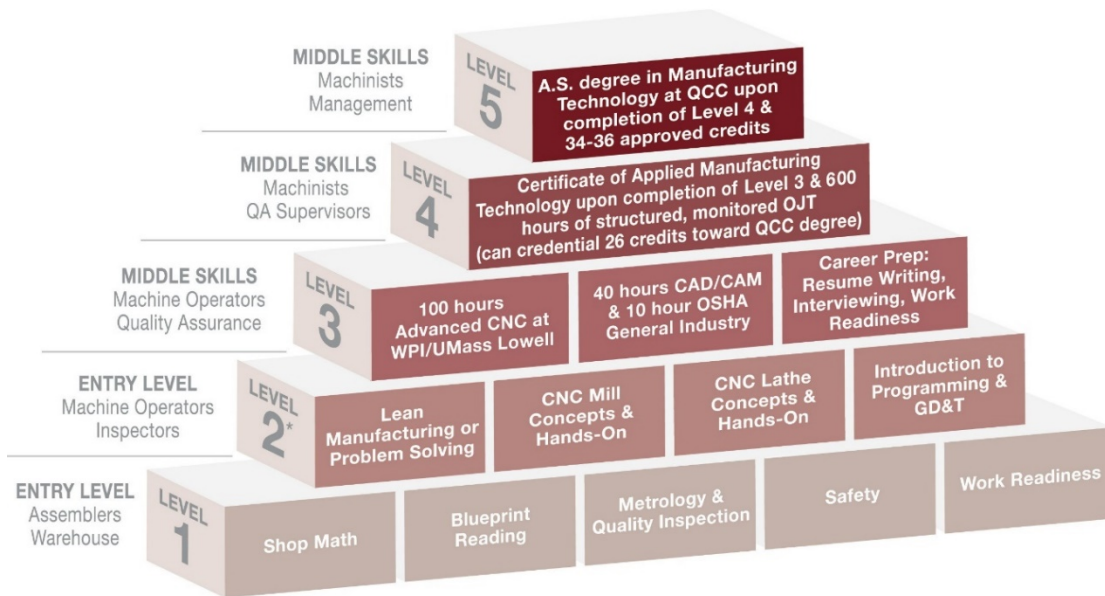
From a national perspective, the outlook for manufacturing-related occupations is strong, particularly as workers obtain industry-recognized credentials. National employment projections from the Bureau of Labor Statistics indicate that employment opportunities for machinists will rise by 9.8% between 2014 and 2024, greater than the average 6.5% increase for all occupations. The data also indicate that employment opportunities for computer controlled machine tool operators will increase by 17.5% from 2014 to 2024, significantly more than the national average for all occupations.<sup>1</sup>

#### Approach

“Our faculty works closely with employer advisory committees, affinity groups at other community colleges as well as statewide industry groups like the MA Manufacturing Extension Partnership to develop curricula that are competency-based and industry credential-focused,” says Kathy Rentsch, Dean of the School of Business, Engineering and Technology at QCC. “We started focusing on a tiered competency-based approach back in 2013 when we worked with the Manufacturing Advancement Center Workforce Innovation Collaborative (MACWIC) in the development of the Applied Manufacturing Technology Certification model. QCC now serves as the chief education partner for MACWIC.”

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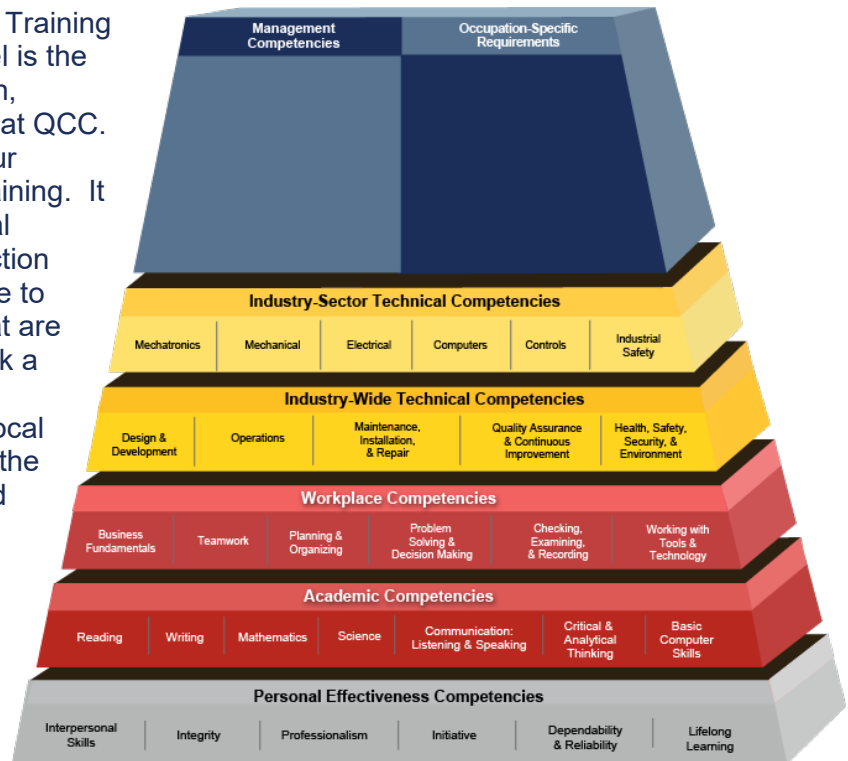
<sup>1</sup> Bureau of Labor Statistics, Employment Projections, [http://www.bls.gov/emp/ep\\_table\\_102.htm](http://www.bls.gov/emp/ep_table_102.htm)



Our current manufacturing curriculum takes the competency-tiered approach to the next level,” says Damian Kieran, Associate Professor of Manufacturing Technology at QCC. Industry-recognized credentials are embedded in competency-based manufacturing curricula.” Three examples follow below:

QCC Course	Course Name	Certification	1-2 Line Description
MNT 100	Manufacturing Safety	OSHA 30 Hour Certification: General Industry Safety and Health	The OSHA 30-hour General Industry Outreach Training course is a comprehensive safety program designed for anyone involved in general industry. The program provides complete information on OSHA compliance issues.
MNT 218	Lean Six Sigma	Society of Manufacturing Engineers Lean Knowledge Certificate	Lean manufacturing is a systematic method for the elimination of waste within a manufacturing system and is a critical tool used in many companies. Lean Certification is an industry-leading certification program that provides students with a comprehensive and effective roadmap for professional development that aligns with industry-recognized standards.
MNT 217	Process Automation and Robotics	FANUC CERT (Certified Education Robot Training) – Handling Tool Operations and Programming	QCC is an educational certified training institution for FANUC America’s Material Handling Program Software. Students can learn to utilize the latest robot technology and achieve an industry recognized certification.

“The U.S. Department of Labor, Employment and Training Administration’s Mechatronics Competency Model is the foundation for our curriculum,” says Jim Heffernan, Professor of Electronics Engineering Technology at QCC. “We offer one industry-recognized credential in our curricula, FANUC’s Certified Education Robot Training. It has been our observation that most of the national industry-recognized credentials are on the production and process side of manufacturing. We would like to offer more mechatronics-specific certifications that are relevant to our local labor market. QCC undertook a survey of local job opportunities for mechatronics technicians. One result is the development of a local certification based on the inclusion of a subset of the skills in certain of our electronics courses required for a national certification in hand soldering from the IPC--Association Connecting Electronics Industries.”



## Complete College America

“QCC was one of the first seven Massachusetts community colleges to begin implementing the ‘Complete College America’s Guided Pathways to Success’ model to successfully achieve the goal of having more students complete their programs of study as well as reduce the time to completion for a degree or certificate,” says Carol King, Director of College and Career Pathways, QCC. “The reduction in time gets students out into the workforce sooner. Regional partners work with us to provide students with the work experience and job openings necessary to begin successful careers once they successfully complete coursework and attain industry-recognized credentials,” says Dean Rentsch.

## Next Steps

“We have already embedded industry credentials in a number of QCC technical programs of study including Automotive Technology, HVAC, Energy Technology Utility and others,” says Dean Rentsch. “We plan to continue our focus on developing competency-based curricula for other disciplines as well.”

## Related Links

Quinsigamond Community College

<http://www.qcc.edu>

MACWIC Training Credentials

<http://www.macwic.org/training/credentials>

Complete College America

<http://completecollege.org/>