Quinsigamond Community College

Manufacturing Technology

Associate Professor Lee Duerden
BEng Mechanical Engineering - UK
Master of Mathematics for educators - WPI

Workforce training
Certificate – 1 year
Associate degree – 2 year
Why am I here?
What do students do if they don’t want to go straight to a 4-year college?

Get a Job
Go to a community college

Win the lottery

Start a business

Stay at home

Get married and have children

How many of these are long term prospects?
What are employers looking for?

1. Presentable
2. Punctual
3. Teachable
4. Interested
5. Communication
6. Basic skills
Career paths – w/o HS graduation?

Mechanic
Sales person
Waiter
Mechanic
Nurse
Technician
Construction trades
Administrative assistant
Hair dresser
Parks and recreation

How many of these are possible without Further education?
What are more realistic options in the Worcester County area?

Teaching
Accounting
Finance

Manufacturing / Engineering
Certified Technician
Health Care
Insurance

Qualified nurse
Hotel and Restaurant

Why do we need K-12 Mathematics?
Why we need K-12 Mathematics for these employers?

- Algebra
- Measurement
- Algebra
- Addition and subtraction
- Ratios and proportions
- Percentages
- Multiplication and division
- Statistics
- Geometry
- Applied Problems?
Who are the manufacturing employers?

- Metso
- Saint-Gobain
- Nypromold
- IPG Photonics
- United Lens
- Prime Metals
Why Applied?

1. Students have a toolbox of math tools.
2. Ask most of them to solve a technical problem, they lack the confidence to choose the most appropriate tools.
3. Employers are looking for this ability.

For example:

A Chef needs to know how much flour to order for the next weeks projected sales?
What are next week projected sales?
Will there be waste? What profit do I need?

There are multiple facets to these questions
In the Manufacturing Sector

Desirable skills

1. Basic Math
2. Blueprint reading
3. Safety
4. Quality
5. Metrology (Inspection)

Credentialing

Skills based education
MACWIC
Manufacturing Advancement Center Workforce Innovation Collaborative

MACWIC LEVEL 5
+21 credits at QCC = A.S. degree

MACWIC LEVEL 4
On-the-Job Training = +12 credits, apprentice certificate
QCC Certificate = +15 credits

MACWIC LEVEL 3
+11 credits at QCC, apprentice card

MACWIC LEVEL 2
3 credits at QCC, pre-apprentice certificate

MACWIC LEVEL 1
Shop Math

QCC A.S. Degree
21 credits at QCC

On-the-Job Training
Level 3 plus 800 hrs

QCC Manufacturing Certificate, Level 3 plus 5 online classes

MIDDLE SKILLS
Machinists
Management

MIDDLE SKILLS
Machinists
QA Supervisors

MIDDLE SKILLS
Machine Operators
Quality Assurance

ENTRY LEVEL
Machine Operators
Inspectors

ENTRY LEVEL
Assemblers
Warehouse

100 hrs Accelerated CNC Skills

40 hrs CAD/CAM & 10 hrs OSHA General Industry

Career Prep: Resume Writing, Interviewing, Work Readiness

Introduction to Programming & GD&T

Lean Manufacturing

CNC Mill Concepts & Hands-On

CNC Lathe Concepts & Hands-On

ENTRY LEVEL
Assemblers

Blueprint Reading

Metrology & Quality Inspection

Safety

Work Readiness

*Career/technical students can graduate with a Level 2 certificate. Levels 1 and 2 training can also be taken online.
What is our impression of manufacturing?

Dirty

Unskilled

Hard labor

Low wages
How about now?
Careers

Quality and Inspection
- Machine operator
- Machine Set up
- Machine programmer
- Process technician
- CAD operator
- CAM programmer
- Safety supervisor
- Procurement technician

Salaries
- Entry level - $13 – 17
- Associates Degree - $15 - $23
- Degree with 5 years experience - $20 - $32
Case study

Manny Gomez
Graduated from QCC 2009
Joined Metso Automation as Assembler.
Currently he is an area Supervisor.

Nikki Smith
Graduated from QCC 2011
Joined Phillips Precision - Quality
Attended FSU – Bachelors program
Currently is the Quality Manager at Phillips Precision.
Recent Success

Emily Miller

Graduated from QCC 2017
Has 3 different offers from manufacturing companies
Has returned to QCC to bolster her resume

Brandon Avila

Graduated from QCC 2015
Attended FSU – Bachelors program
Working fulltime as Engineering technician
Recent Success

James Walden
Graduated from QCC 2018
Worked as QCC FABLAB assistant.
Joined Perkin Elmer – Digital chip production

Stephen Burris
Graduated from QCC 2018
Journeyman apprentice
Working fulltime as CNC machinist
Workforce training

Killeen Securities

In house workforce training
Summer 2018
Facility expansion to new facility

Karl Storz

Encourage and fund higher education
26 employees attending QCC Manufacturing program
Workforce training
QCC programs

Manufacturing Technology
Electronics
Robotics
Photonics

Complete 2 years for under $25,000

Compared to $86,000

Transfer and save $61,000