CT Community College System, CT College of Technology (COT) & Regional Center for Next Generation Manufacturing

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Connecticut Community College System
Connecticut Community Colleges & Workforce Development

Connecticut State Colleges & Universities (CSCU)
- Four state universities; 12 community colleges; & Charter Oak State College
- 85,000 students enrolled and 15,000 graduates annually
- 96% of enrolled CSCU students are Connecticut residents; 35% of Connecticut high school graduates who go to college directly following high school attend a CSCU institution
- Three (3) Regional Workforce Development Officers

College of Technology (COT)
- Legislatively created in 1995 by the Higher Education Council during the merger of Technical Colleges with Community Colleges to develop career pathways for engineering and technology programs
- Responds to workforce needs through community college programs
- Seamless pathways between community colleges & universities & technical high schools that include the Statewide Manufacturing Programs: certificates, A.S degrees and career pathways
- Governed by a Statewide Site Coordinator's Council: Community Colleges, State & Private Universities, Comprehensive & Technical High Schools, Non-Profits, Business & Industry

Regional Center for Next Generation Manufacturing (RCNGM)
- 4 Rounds of National Science Foundation Advanced Technological Education (NSF ATE) Funding
- NSF Center of Excellence in Manufacturing – only 4 in the US
- Received funding in 2019 to become an NSF ATE Resource Center
- Targets Underserved & Underrepresented Populations
- Provides Degrees & Credentials for Workforce Readiness
- Recognized infrastructure of COT as a national model
- Received international supplements for international collaboration with Germany (2012) & France (2019)
College of Technology
Higher Education Partners

Legend

Community Colleges (12)
ACC Asnuntuck CC
CCC Capital CC
GCC Gateway CC
HCC Housatonic CC
MCC Manchester CC
MXCC Middlesex CC
NCC Norwalk CC
NVCC Naugatuck Valley CC
NWCC Northwestern CT CC
TRCC Three Rivers CC
TXCC Tunxis CC
QVCC Quinebaug Valley CC

Universities (10)
UCONN University of Connecticut
CCSU Central Connecticut University
COSC Charter Oak State College (online)
FU Fairfield University
UH University of Hartford
SCSU Southern CT State University
ECSU Eastern CT State University
UB University of Bridgeport
SHU Sacred Heart University
UNH University of New Haven

Technical High School System
Comprehensive High Schools
Business and Industry
CSCU Advanced manufacturing Centers

Asnuntuck Community College Advanced Manufacturing Technology Center
- Over 50,000 square feet of manufacturing space on campus
- NEW - ISO 9001:2015 certified – One of the first in the Nation
- NEW - First American Welding Society Accredited Test Facility in Connecticut
NEW
Advanced Manufacturing Technology Center @ Tunxis

New Tunxis Community College Advanced Manufacturing Building
• 44,000 square feet of manufacturing space
• Adjacent to current Tunxis Community College campus
• Machining
• Mechatronics / Robotics / Automation / Mfg 4.0
• 3-D Additive Manufacturing
• Quality Inspection
• All Pathways to Certificates / Stackable Credentials – Through COT
Connecticut Community Colleges & Workforce Development

- Connecticut Community Colleges recognize and award college credit for pre-apprenticeship and apprenticeship programs and for prior learning as part of a **stackable credential career path**

- The **State of Connecticut has invested in the development and expansion** of the Advanced Manufacturing Technology Centers at community colleges

- The community colleges are collaborating with **technical high schools** to offer training programs including academic certificates and degrees, programs for incumbent worker, and programs for the unemployed and underemployed.

- The community colleges partner with **industry and the Workforce Development Boards** to align workforce needs with curriculum and seek resources to expand workforce development programs

- The community colleges and their College of Technology collaborate with industry associations including the CMC (**CT Manufacturing Collaboration organized by CBIA**) to offer industry driven curriculum

- The College of Technology and the Community Colleges are aligning the advanced manufacturing programs’ strategic goals and objectives to align with the **Governor’s Workforce Council’s recommendations**
Connecticut Community Colleges & Workforce Development

Community colleges work with:

- Connecticut’s Workforce Development Boards:
  - Program development for unemployed and underemployed residents

- Connecticut Technical Education and Career System
  - Advisory Board participation
  - Facilities
  - Pathways

- Connecticut Manufacturers’ Collaborative
  - Attend weekly and monthly meetings

- Governor’s Workforce Council
  - Attend meetings
  - Serving on committees

- AARP CT
  - Recruitment of retired manufacturers as instructors in community college and technical high school manufacturing programs (replicated 14 states)
  - Offer scholarships to adults who enroll in a manufacturing course at a CC
Stackable Credentials Including Micro-Credentials & Digital Badges

- The COT-RCNGM is developing **micro-credentials and digital badges** that will be part of the stackable career pathways

- Will include credit and non-credit options

**EXAMPLES**

- **Tooling U & 180 Skills**: provides online short-term skills training for the manufacturing sector
  - Extensive library of skills training that was created in partnership with aerospace, automotive, and commercial manufacturers
  - Implemented through Governor’s Workforce Council in response to unemployment during COVID-19 pandemic
  - Earn badges that can be used through the COT stackable credential pathways

- Example: Partnership with **Business-Higher Education Forum, New England Board of Higher Education and industry**, including **Stanley Black & Decker** to develop a **Digital Talent Ecosystem**
  - Goal is to develop new pathways to digital skills and credentials
  - A set of KSAs has been developed and community colleges have been surveyed for applicable courses for a Digital Generalist Pathway. Implementation options are currently being discussed
Pathways for Middle School and High School Students

**Middle School Programs:** opportunities to participate in advanced manufacturing coursework delivered in their own schools

- Project-based learning approach is led by CC instructors with teachers within the schools themselves
- Experiential design allows students to make an informed decision regarding whether they should pursue a career in Advanced Manufacturing upon the conclusion of their 10th grade year

**College Connections:** Students from area high schools study and participate in a series of welding and fabrication, CNC machining, and electronics and electro-mechanical technology programs for both high school and college credit

- Students earn 12-13 college credits while in the program
Student Programs

- Incorporate **technology and professional skills** into a team-based extracurricular program
- Professional Skills: Teambuilding using Behavioral Diversity (DISC); Emotional Quotient (EQ); Dealing with Difficult People; Strategic Management Process; Time Management; Goal Setting; Advanced Memory Techniques

- **Mechanical & Manufacturing Engineering Technologies Program (MET²)** - Engage community college and university students in team-based learning environment and industry projects
  - Technical Skills: 3D Modeling (SolidWorks); 3D Printing; Virtual/Augmented Reality
  - Held during Winter Intersession through May annually

- **Engineering Technology Challenge (ETC)** – Engage high school students in team-based learning environment
  - Technical Skills: Programming/Coding Drones
  - Held over 5 Saturdays
  - Current virtual program w/ Hartford Public HS
2nd Chance Pell Grant Program

- Machine Technology & Quality Inspection Programs
- Manufacturing Courses Offered at all Four Prison Facilities in the Enfield Area (Running Pilot Post-Covid with online inmate programs)
- Graduates with the skills that lead to a career in Advanced Manufacturing
Outreach Materials

- Manufacturing career profile videos:
  - Manufacture Your Future 2.0
  - You Belong: Women in Manufacturing
  - Veterans: From Military to Manufacturing

- Educator Guides include:
  - Poster
  - DVD of career profiles
  - Activities to accompany videos
Portable Mechatronics Labs

- $125,000 worth of FESTO Portable Mechatronics Labs and laptops preloaded with courseware granted to Asnuntuck in October of 2019.

- These trainers have been embedded in the curriculum of local high schools. For 8 weeks each Spring and Fall, Enfield and Stafford High Schools receive these portable labs to provide hands on training for all students.

- When not in high school use, these portable labs are utilized by the college and area businesses for workforce development.

- 30-hour FESTO training with all equipment can be delivered anywhere in the State.
Apprenticeships

• Asnuntuck and Tunxis have partnered with the CT Department of Labor (DOL) to offer 2 year, 288-hour Apprenticeship/Pre-Apprenticeship programs. In addition to becoming registered apprentices with the DOL, students will pick up 9 college credits.

• Asnuntuck is on its last module this June, 2021 and will graduate 12 students. The program initially started in March 2019 with 18 students. Some were separated from their parent company due to pandemic related layoffs, etc.

• Tunxis is on the third a total of eight courses and slated to graduated 12 in the Spring of 2022

• Between both Apprenticeship programs, Asnuntuck and Tunxis have worked with employees from 12 area companies. One hundred percent of the instructor tuition and materials was covered by the grant. Employers also received $13,000 back in wage reimbursement per employee.

• Both programs ran uninterrupted, pivoting to online immediately and delivering hands on assignments whenever possible for students to work on at home.
New Online MFG Certificate

• In Fall of 2021, Northwestern Community College will offer a 100-hour, online Manufacturing Systems Certificate program that will be free for companies with offices in the 41 Northwest Connecticut towns applicable.

• Tuition cost of $3,000 per student will be 100% covered by the CT-WHISP/H1B grant.

• Upon successful completion, students will be issued a certificate by Northwestern Community College through the CT College of Technology.
Professional Development For Educators

**Summer Teacher Workshops**
- Provide professional development for **community college faculty, middle school and high school teachers** in the use of skills-based curriculum both online and in-person.
- Professional Skills: Teambuilding using Behavioral Diversity (DISC); Emotional Quotient (EQ); Dealing with Difficult People; Strategic Management Process; Time Management; Goal Setting; Advanced Memory Techniques
- Technical Skills: 3D Modeling (SolidWorks); 3D Printing; Programming/Coding Drones
- Educators are encouraged to develop curriculum that incorporates professional and technical skills learned during the workshop
- Programming drones and industry applications of smart manufacturing

**Emotional Intelligence Workshop**
- Held November 20, 2020 “Your workshop was truly exceptional.” - Magesh Chandramouli, Ph.D., Associate Professor, Computer Graphics Technology, Purdue University Northwest
NEW - Manufacturing Technology Instructor Position

Major Accountabilities

The Manufacturing Technology Instructor is accountable for providing beneficial learning opportunities for assigned students through effective performance in these essential functional areas:

- Program planning, development, and oversight;
- Instruction planning and preparation;
- Classroom and shop instruction;
- Student records;
- And all other duties as assigned.
Manufacturing Technology Instructor Position

Qualifications

These skills and abilities are typically acquired through a combination of education, training, and industry experience, which would either include:

1. High school diploma (or equivalent) from a public comprehensive high school or vocational technical high school and a minimum of 10 years of manufacturing technology industry experience OR;

2. High school diploma (or equivalent) from a public comprehensive high school or vocational technical high school and a minimum of 5 years of manufacturing technology industry experience and a CSCU community college advance manufacturing technology certificate or nationally recognized credential (i.e. NIMS, AWS, MSSC) OR;

3. Advanced Manufacturing Technology Associates Degree and a minimum of 5 years of manufacturing technology industry experience. Applicants who do not have prior teaching experience must complete approved professional development in academic and practical instruction techniques and methodologies offered within the Connecticut State Colleges and Universities system.
Manufacturing Instructor Survey/
AARP Partnership

- A core group of stakeholders met to determine how to address the need for instructors from a recruiting perspective

- Borrow My Glasses, LLC was hired to evaluate the viability of tapping industry retirees and other experienced employees to serve as instructors

- AARP and the COT-RCNGM were members of the stakeholder group
AARP Partnership

What We Did Based on Survey Recommendations

• Held 3 information sessions for potential instructors
  • Wallingford Public Schools, Goodwin College, and Tunxis Community College
  • Advertised through each stakeholders own distribution lists and AARP

• Article in the AARP Bulletin and various local articles and interviews

• Reaching target audience requires marketing strategies that different from common digital/social media campaigns
AARP Partnership

Immediate Impacts
• Instructor/Staff Recruitment
  • Hired Welding Lab Tech, math adjunct, and industry mentors for faculty within weeks
  • Receiving resumes

Unexpected Results
• Student Recruitment Initiatives for 50+ Population
  • Community college scholarship program through AARP for age 50+ community college manufacturing students
  • Funding for manufacturing bootcamps for women at community colleges
• Model disseminated to 13 other states through National AARP
  • Presented during AARP & American Association for Community College Trustees Meeting

Upcoming Events
• Virtual seminars on how to get into teaching manufacturing
  • May 12th at 5:30 pm
  • May 18th at 10:00 am
COT/Advanced Manufacturing Technology
programming Summary

1. **Credit Programs:** Associate degree programs: Traditional 2-year, 60 credit or more degree programs, can be applied to articulation agreements to a 4-year institution towards a bachelor’s degrees. **Certificate programs:** 35 credits or less, can be applied to COT associate degrees

2. **Noncredit programs/Business Industry Partnership training:** Short-term training, pipeline, incumbent worker and online on-demand training where the length of time varies from one week to one semester (16 weeks) to more than one semester in length.

3. **High School Bridge programs:** Courses that transfer into the CCC AMT programs

4. **Incarcerated Inmate programs:** Courses and programs that prepare inmates for reentry to society and work
Moving Forward...

• Have been working with the Office of Workforce Strategies & GWC

• Strategic Plan with Recommendations for Advanced Manufacturing Technology Programs

• Recommendations include:
COT/Advanced Manufacturing Technology programming

**Credit Programs:**

- COT to have oversight of all manufacturing programs, including legacy programs
- Review and align consolidate technology studies programs across the system
- Ensure all credit certificates are properly coded to qualify for financial aid
- Provide degree options to meet local business and industry needs
- Expand Credit for Prior Learning (CPL) program, offer credit programs on a non-traditional calendar
- Expand the COT website to market program offerings including career pathway and incumbent worker trainings with a link to career opportunities
- Market engineering technology program as a pathway to a certified 7 to 12 school technology education teachers
- Expand and track internships, apprenticeships, externships, and other experiential learning opportunities and track employment for graduates and transfers
COT/Advanced Manufacturing Technology programming

Noncredit programs/Business Industry Partnership training:

- Quantify industry demand for advanced manufacturing workforce for the immediate, intermediate, and long-term needs
- Develop a standardized data base matrix that can applied across program designs to provide access to measured outcomes and share best practice program designs
- Evaluate high performing training courses and programs for credits or awarding of badges
- Have a centralized marketing plan to share course and program offerings
- Increase industry participation in internships, work study, job shadowing, apprenticeship, and hiring out of programs. For example, Mechatronics, Robotics, and Automation Engineer & Quality Control are in high demand, but the programs have low completions rates
- Partner with business and industry to expand skills-based training offerings that align with industry-valued certifications
- Secure both state and federal funding to support and expand COT credit and noncredit programs including staffing and capital equipment/infrastructure.
COT/Advanced Manufacturing Technology programming

**High School Bridge programs:**
- Develop a minimum requirement for high school student participation and performance standards for student achievement to stay in program
- Replicate and expand College Connection programs throughout the state
- Fund transportation and marketing classes on campus for high school students
- Determine most cost-effective models as alternatives or addition to current models and standardize and scale
- Build manufacturing sector-based career pathway programs
- Provide transfer counseling to College Career Pathways (CCP), College Connections and High School Partnership students to continue postsecondary education
- Develop measurable outcome standards to measure success and ROI

**Incarcerated Inmate programs:**
- Determine a way to offer classes in the facilities during COVID and provide hands-on component in the facilities and outside of facilities using mobile labs
- Establish online and or hybrid models of programming
- Seek out additional federal or philanthropy funding for programs
- Participate in the Governor’s Workforce Council and Office of Workforce Strategy Reentry committee to establish a state-wide process and system to provide programing and training to the reentry population and align with the NAACP Million Jobs Campaign
- Advise released inmates of opportunities to continue their education on campus and job placement
How Can ACM Help?

• Offer Tours of Modern Manufacturing Facilities
• Paid Internships
• Participate on Advisory Boards
• Participate in Consortium Trainings
• Offer Tuition Reimbursement for Upskilling Existing Employees
• Help Identify Instructors / Retirees to Teach
BIG THANK YOU!

• Paul Murphy – over 20 years partnering with Asnuntuck – major contributor!

• ACM – Single Largest Donation
  • $210,000+ for scholarships!

• Hiring 1000’s Students Through the Years!
Thank you!