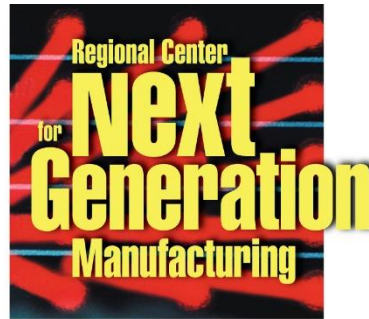


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A National Science Foundation Center of Excellence

Addressing the Need for Manufacturing Technology Instructors

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College of Technology – (COT)

Creation

- Legislatively created in 1995
- Merger of Technical Colleges with Community Colleges
- Established by Higher Education Council

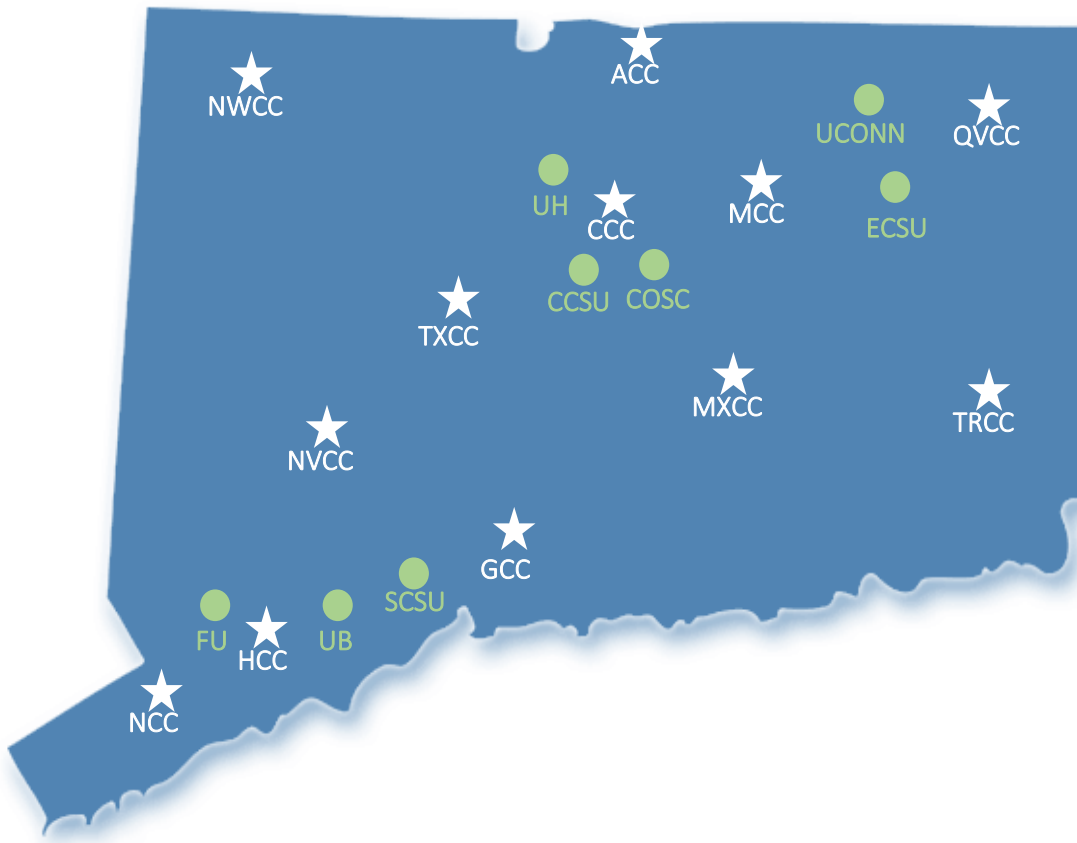
Purpose

- Seamless pathways between community colleges & universities & technical high schools
- Articulation agreements for engineering and technology programs
- Respond to workforce needs through community college programs

Leadership

- Governed by a Statewide Site Coordinator's Council
 - Community Colleges
 - State & Private Universities
 - High Schools
 - Non-Profits
 - Business & Industry
 - Consultants

COT – Higher Education Partners



Legend

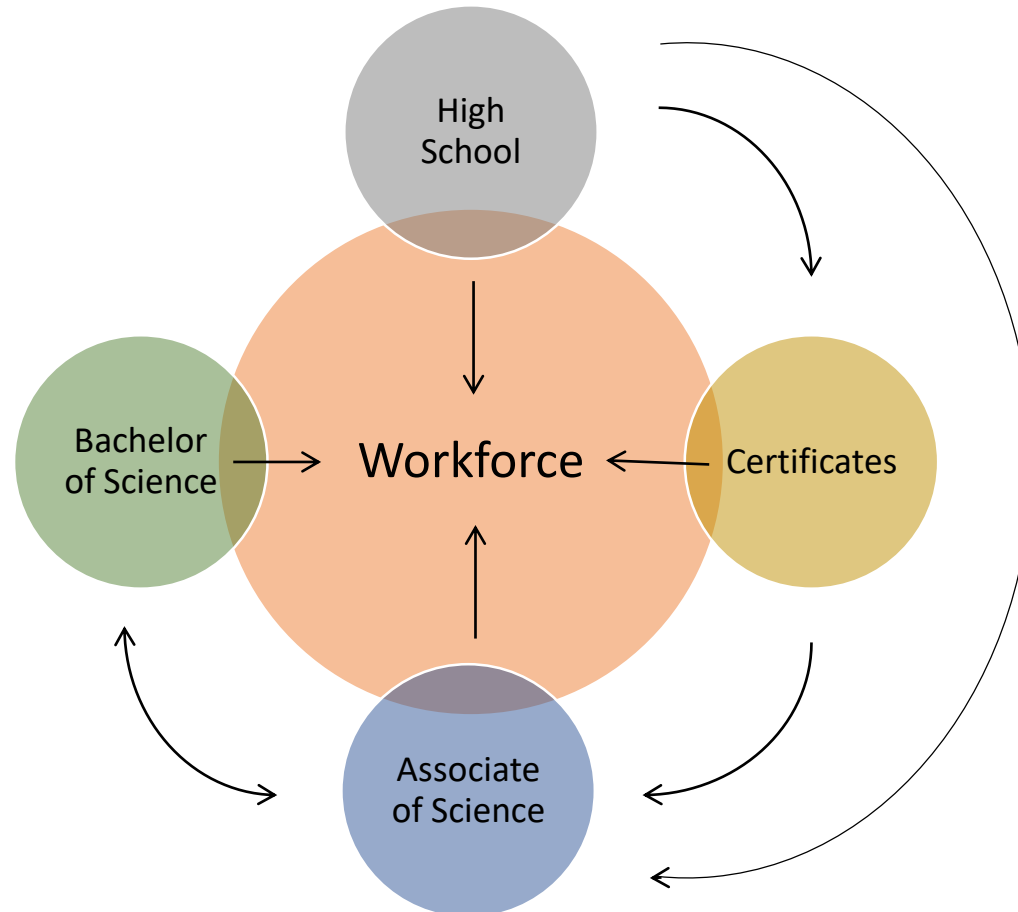
Community Colleges (12)

| | |
|------|---------------------|
| 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 (8)

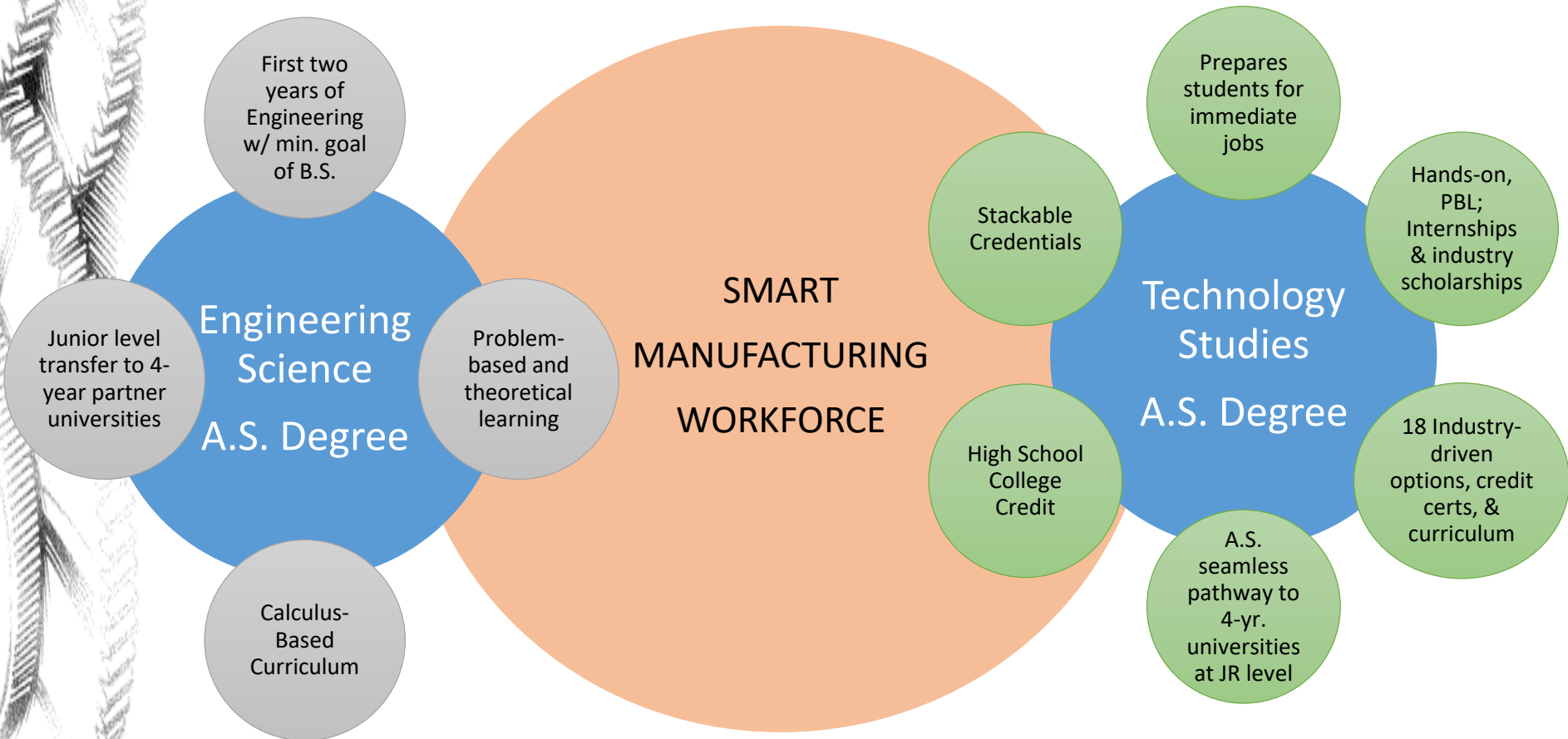
| | |
|-------|------------------------------------|
| UCONN | University of Connecticut |
| CCSU | Central Connecticut University |
| COSC | Charter Oak State College (online) |
| FU | Fairfield University |
| UH | University of Hartford |
| SCSU | Southern CT State University |
| ECSU | Eastern CT State University |
| UB | University of Bridgeport |

COT Pathways & Articulation



COT Pathways & Articulation

All CCs have same core curriculum for each pathway



Regional Center for Next Generation Manufacturing (RCNGM)

- 3 Rounds of National Science Foundation Advanced Technological Education (NSF ATE) Funding



- NSF Center of Excellence in Manufacturing – only 7 in the US
- Targets Underserved & Underrepresented Populations
- Provides Degrees & Credentials for Workforce Readiness
- Recognized infrastructure of COT as a national model
- Received an international supplement in 2012 for international collaboration with Germany

COT-RCNGM Goals

Goal One

- Student Recruitment & Persistence

Goal Two

- Professional Development

Goal Three

- Curriculum Development

Goal Four

- Dissemination – Regional Collaboration

Local Leveraging & Impacts

NSF Collaborations

- Project Grant for Professional Development for faculty
- New Performers (HCC, NWCC)
- Life Support & Sustainable Living (LSSL)
- Mechanical & Manufacturing Technologies (MET2)
- Engineering Technology Challenge (ETC)
- Education Connections
- New England Board of Higher Education (NEBHE) Advanced Manufacturing Problem Based Learning (AM PBL)
- Computer Science, Mathematics, and Physics (CSMP) S-STEM Scholarship Program
- Smart Manufacturing for America's Revolutionizing Technological Transformation (SMART2)

- One of five grants received for CC nationwide for collaboration with Germany-students spent a month in Germany studying and visiting industry

Local Leveraging & Impacts

US Department of Labor (DOL) Grants

- Trade Adjustment Assistance Community College and Career Training (TACCCT) Grants
 - Connecticut Manufacturing, Energy, & Transportation (CT MET)
 - Connecticut Advanced Manufacturing Institute (CAMI)
- New Apprenticeship Models

CT Advanced Manufacturing Technology Centers: State of CT Funds to create and further expand CC Manufacturing Centers modeled after Asnuntuck CC

Naugatuck Valley CC, Housatonic CC, Quinebaug Valley CC
Manchester CC, Middlesex CC, Three Rivers CC, Tunxis CC

International Leveraging & Impacts

International Collaborations

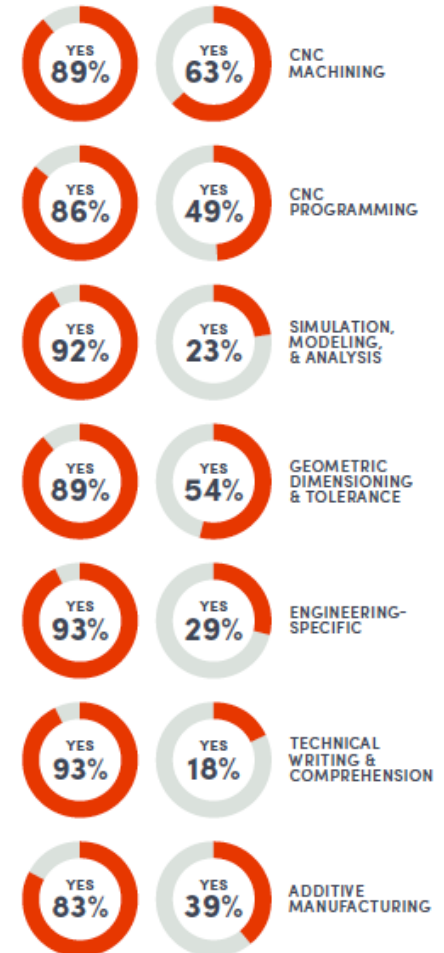
- One of five grants received for CC nationwide for collaboration with Germany – 12 community college students spent a month in Germany studying and visiting industry and educational institutions
- CT Collaborative Learning for International Capabilities and Knowledge (CLICKs)
 - Provides international experiences in the classroom, currently with France and Mexico

Most data collection in technology programs focuses on industry and student needs and satisfaction.



Manufacturing Skills Gap

SKILLS NEEDED VS. TRAINING OFFERED

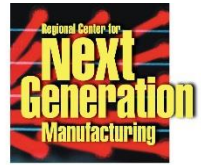




While these are still very important factors that need continuous assessment and improvement, there is a another challenge...



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INSTRUCTOR RECRUITMENT

Advanced Manufacturing in CT

- Connecticut's advanced manufacturing industry is booming again
- An estimated 25,000-35,000 advanced manufacturing positions will have to be filled over the next two decades in CT alone
- Community college and technical high school facilities have been built, refurbished, and stocked with state-of-the-art advanced manufacturing equipment through federal and state funds
- New advanced manufacturing programs have been approved for implementation through the College of Technology and Board of Regents
- Programs are ready to expand even further but face the challenge of finding instructors

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

- 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-CT took lead for distributing survey and organizing follow-up activities

Manufacturing Instructor Survey



Manufacturing Instructor Survey

Methods

20 Key Informant Interviews on 6 Topics

- Viability of concept
- Incentives
- Barriers
- Supports
- Timing
- Messaging

117 Survey Responses

- Employers
- Association
- Colleges, Universities, Technical Colleges
- Retiree Groups

Manufacturing Instructor Survey

About the Respondents

| | | |
|--|----------------------|-----|
| Gender | Male | 79% |
| | Female | 18% |
| | Prefer not to answer | 3% |
| Age | 18 to 24 years | 4% |
| | 25 to 34 years | 15% |
| | 35 to 44 years | 16% |
| | 45 to 54 years | 12% |
| | 55 to 64 years | 37% |
| | 65 and older | 16% |
| In a union? | Yes | 10% |
| | No | 90% |
| What shift do you currently work? | First | 74% |
| | Second | — |
| | Third | — |
| | Not applicable | 26% |

Manufacturing Instructor Survey

About the Respondents

| | | |
|--|--------------------------------|-----|
| What size company do you currently work for? | Small (less than 50 employees) | 43% |
| | Medium (50 to 499 employees) | 33% |
| | Large (500 or more employees) | 24% |
| How many years have you been working in advanced manufacturing? | Less than one year | 7% |
| | One year to 4 years | 10% |
| | Five to 14 years | 23% |
| | 15 years to 24 years | 18% |
| | 25 years to 39 years | 27% |
| | 40 years or more | 15% |
| In how many years do you plan to retire? | 1 to 2 years | 6% |
| | 3 to 4 years | 10% |
| | 5 to 9 years | 15% |
| | 10 to 14 years | 12% |
| | 15 years or more | 46% |
| | I am already retired | 11% |

Manufacturing Instructor Survey

Results

Top Areas of Manufacturing Expertise

- Manufacturing
- Lean manufacturing
- CNC machining
- Quality control and assurance
- Tool and die
- Six Sigma

Teaching/Training Experience and Interest

- Half (54%) of respondents have formally or informally trained people in advanced manufacturing at their job
 - Nearly half (41%) have not trained anyone
 - Some (12%) have taught at the college level or high school level (4%)
- One-third (32%) of respondents have thought about becoming an advanced manufacturing instructor
 - 13% are already an instructor

Manufacturing Instructor Survey

Results

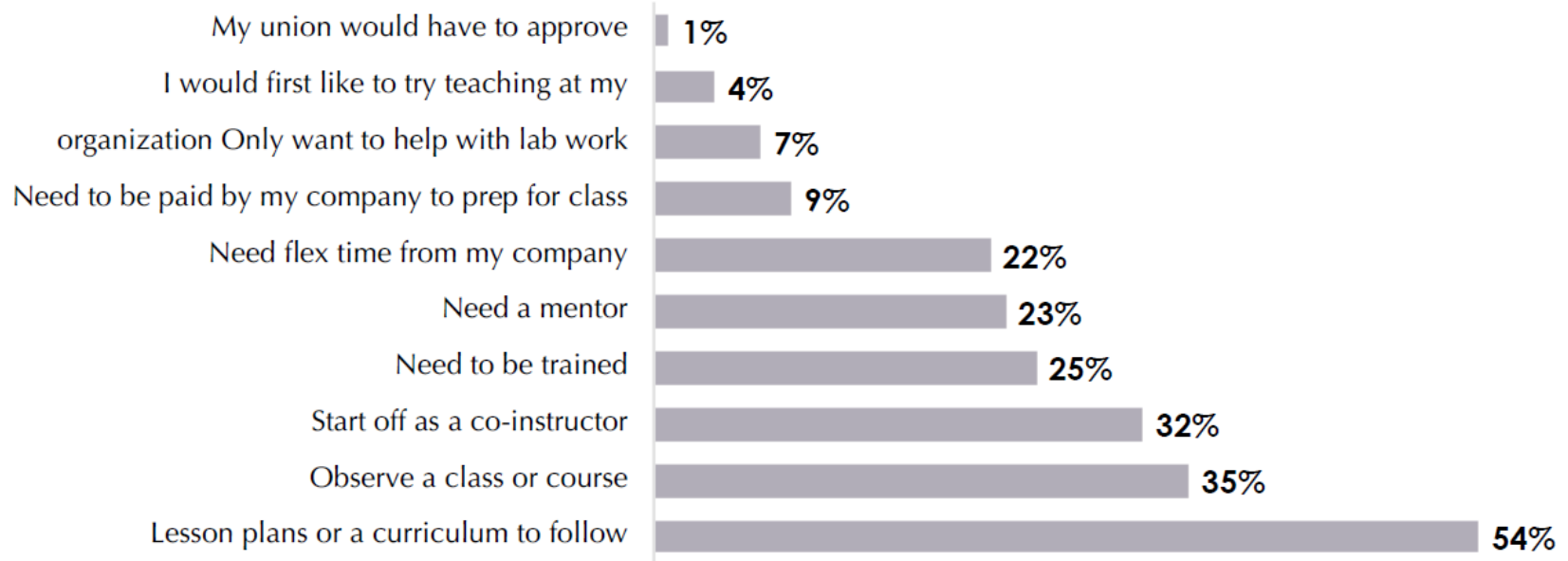
When asked what supports they would need to consider becoming an instructor

- Half (54%) would like to have lesson plans to follow
- One-third (35%) would like to observe a class or course or start out as a co-instructor (32%)
- One quarter (25%) would need to be trained on how to teach and have a mentor (23%)

Manufacturing Instructor Survey

Results

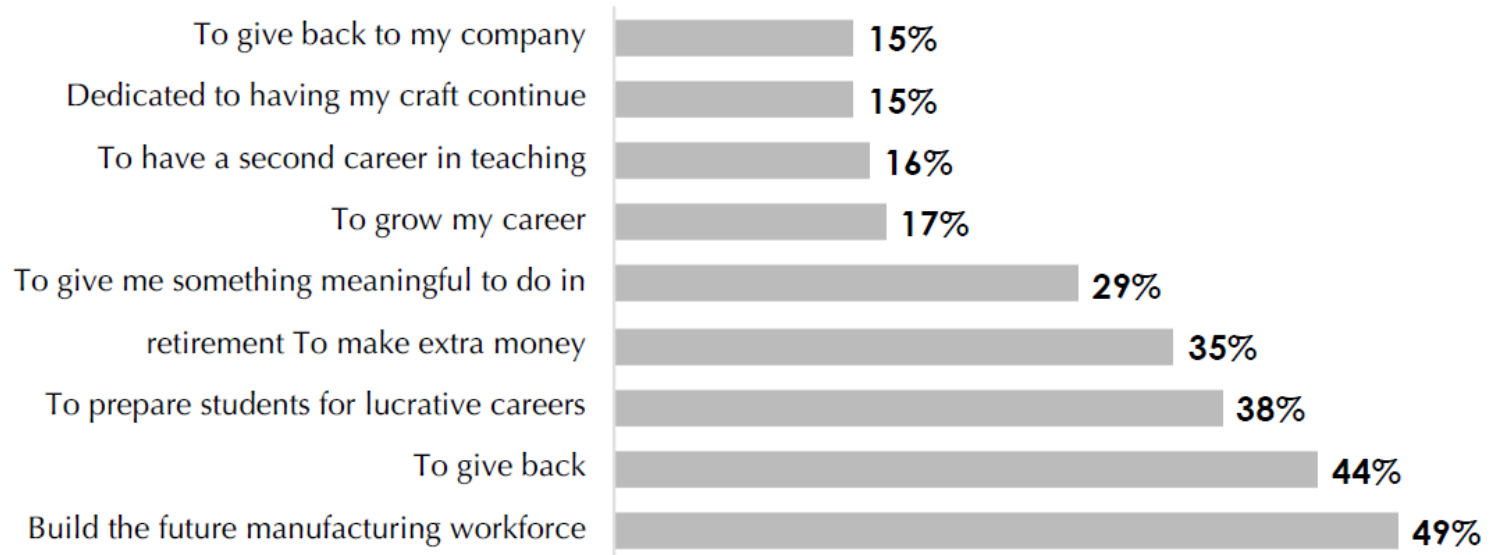
Teaching/Training Experience and Interest



Manufacturing Instructor Survey

Results

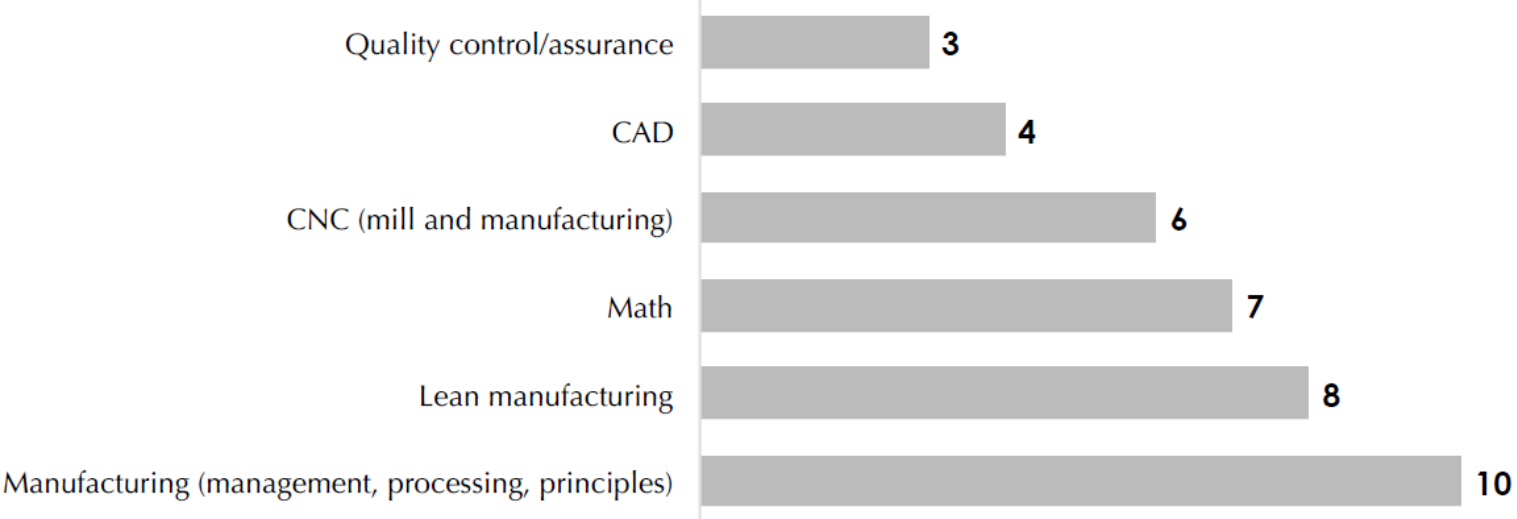
Teaching/Training Experience and Interest



Manufacturing Instructor Survey

Results

Teaching/Training Experience and Interest



Manufacturing Instructor Survey

Summary of Survey Findings

- Interest in teaching exists, but instructor training, supports and guidance are needed
- The main reasons respondents want to teach is to give back, build the future-manufacturing workforce, and prepare students for lucrative careers
- When considering messaging, half stay informed about advanced manufacturing developments and events from an association newsletter, websites, or their employer and one-third rely on social media for information
- Respondents seek information from their associations
- In thinking about their transition from full-time work, respondents would like their employers to share a variety of opportunities with them including flex-time and part-time work options, teaching, mentoring, and volunteering
- Timing is everything; of those interested in becoming an instructor, about one quarter (27%) would like to learn more when they are nearing retirement, 19% would like to learn more in mid-career, and 18% would like to learn more early in their career

Manufacturing Instructor Survey

Recommendations

- Hold a forum to discuss survey findings
- Develop joint messaging and communication campaigns about becoming an instructor or mentor, including public service announcements
- Ask employers and associations to share and promote newsletter items such as announcements recruiting instructors, advertisements for instructor training courses, and articles profiling instructors and/or students
- Consider how to engage other stakeholders, such as technical high schools, retiree groups or clubs, and the formerly incarcerated
- Develop instructor training programs and/or support forums as a benefit of association membership, perhaps facilitated by current instructors or community college trainers

Manufacturing Instructor Survey

Recommendations

- Create a shared database or registry for potential instructors
- Consider working with local community colleges to discuss how to build supports for interested employees to learn about becoming an instructor. Perhaps with the approval from employers, these instructors could give a brief presentation to employees or create a video that can be shared with employers
- Implement additional evaluation projects to measure impact or explore these issues further

Manufacturing Instructor Survey

What We Did

- 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



Manufacturing Instructor Survey



Your Next Act in Manufacturing ***Building Tomorrow's Workforce***

June 13, 2019

Tunxis Community College

271 Scott Swamp Road, Building 600, Room 6-127/128
Farmington, CT

12:30-1:20 p.m. INTRODUCTION TO OPPORTUNITIES IN THE CLASSROOM

Nora Duncan, State Director, AARP CT

Richard DuPont, Director of Community & Campus Relations - Advanced Manufacturing Technology Center, Housatonic Community College

Dr. Karen Wosczyzna-Birch, Executive Director, CT College of Technology and Regional Center for Next Generation Manufacturing

Chip Thermer, Program Director of Manufacturing, Goodwin College

Rob Kovi, Career Technical Education Coordinator, Wallingford Public Schools

John Murphy, Education Consultant- Manufacturing Cluster, CT Technical High School System

Christa Sterling, Director of Continuing Education, Central CT State University

1:20 – 2:00 p.m. LEARN MORE

2:00 – 2:30 p.m. OPTIONAL NETWORKING & TOUR



Manufacturing Instructor Survey

Impacts

- Hired Welding Lab Tech
- Potential math adjunct
- Hired mentors for faculty
- Receiving resumes

Unexpected results

- Community college scholarship program through AARP
 - For age 50+ community college manufacturing students

Manufacturing Instructor Survey

Next Steps

- Database of resumes
- Database of available positions
- Continuation of info sessions
- Presentations to manufacturing associations and stakeholders
- Continuation of press releases and interviews
- Marketing campaign/retiree instructor success stories
- Workshops for new instructors on incorporating professional skills into curriculum and creating curriculum and classroom management for technical skills

Thank you!

Questions?

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