CT College of Technology
Regional Center for Next Generation Manufacturing

Partnering with Manufacturing USA Institutes

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# College of Technology (COT) Overview

## 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
- Umbrella for the Statewide Manufacturing Programs: Certificates, A.S. Degrees and career Pathways
- Offers multiple entry and exit points for students to meet educational and career needs

## Leadership
- Governed by a Statewide Site Coordinator's Council
- Community Colleges
- State & Private Universities
- High Schools
- Non-Profits
- Business & Industry
- Consultants
College of Technology (COT) Overview

Statewide Site Coordinator's Council

- Meets monthly during the academic year
- Average of 25 attendees per meeting – due to Covid-19, transitioned to online meetings in April 2020 (33 attendees) and May 2020 (30 attendees)
- Disseminates initiatives for students and faculty
- Tours of labs/facilities at host institution
- Oversees curriculum for engineering and technology pathways
- Must review new programs and program modifications under COT and vote to approve before BOR review and approval
- Ensures core curriculum is followed and courses will transfer within community colleges and to universities
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 (9)
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
All 12 CT community colleges have the same core curriculum for each pathway
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 an international supplements for international collaboration with Germany (2012) & France (2019)
- COT named HI TEC Innovative Program of the Year (2020)
- Recognized three times in 2013 MIT study commissioned by the National Academy of Sciences for best practices and as a national model for Technology Education
- Cited as a Key Resource in CBIA’s 2019 Connecticut Manufacturing Report
Leveraging & Impacts

**NSF Collaborations**

- Project Grant for Professional Development for faculty
- New Performer Grants (HCC, NWCC, NCC)
- Life Support & Sustainable Living (LSSL)
- Mechanical & Manufacturing Technologies (MET2)
- Engineering Technology Challenge (ETC)
- Guitar Building Workshop (NSF Grant) Summer 2020
- New England Board of Higher Education (NEBHE) Advanced Manufacturing Problem Based Learning (AM PBL)
- Computer Science, Mathematics, and Physics (CSMP) S-STEM Scholarship Program 2018-2023 awarded to CCSU with TCC and MCC

**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
  - NSF – International Grant received 2019
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 Model DOL Grant Awarded to the System

**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, Northwestern CT CC
What are Manufacturing USA Institutes?

- Launched in 2011 by President Obama as the National Network for Manufacturing Innovation (NNMI); named changed to Manufacturing USA as Obama Administration ended
- Funded by U.S. Departments of Commerce, Defense, and Energy
- Public-private institutes - Industry, education, and government partnerships
- Each institute:
  - focuses on a different advanced manufacturing technology area
  - Works to secure America’s future through manufacturing innovation, education, and collaboration
- Institutes include a workforce development component
- Often offer discounted or free membership for community colleges
Manufacturing USA Institutes

- America Makes: Additive Manufacturing, Ohio
- affa: Smart Fabrics, Massachusetts
- LIFT: Lightweight Metal Manufacturing, Michigan
- biofabusa: Biofabrication & Biotechnology, New Hampshire
- PowerAmerica: Semiconductor Technology, North Carolina
- IACMI: Advanced Composite Mfg & Recycling, Tennessee
- AIM photonics: Photonic Integrated Circuits, New York
- CESMII: Smart Sensors & Digital Process Controls, California
- Nextflex: Flexible Hybrid Electronics, California
- RAPID: Chemical & Material Processing, New York
- NIMBL: Metrology & Biotechnology, Delaware
- MXD: The Digital Manufacturing Institute, Illinois
- REMADE INSTITUTE: Recycling & Sustainable Manufacturing, New York
- ARM: Robotics & Automation, Pennsylvania
Manufacturing USA Institutes

Benefits of becoming a member or partnering:

• Ability to submit project proposals or become a partner on project proposals
• Access to information on emerging technologies
• Access to local and national network of industry and education members
• Access to resources and professional development opportunities
• Ability to provide input in how emerging technologies are incorporated into curriculum, providing a voice for community colleges
COT-RCNGM & Manufacturing USA Institutes

www.nextgenmfg.org
A National Science Foundation Center of Excellence
Overview of AFFOA:

• Mission: To enable a manufacturing-based revolution by transforming traditional fibers, yarns, and fabrics into highly sophisticated, integrated and networked devices and systems.

• Funded by the U.S. Department of Defense

• Officially announced as an NNMI Institute on April 1st, 2016

• Based out of Massachusetts Institute of Technology (MIT)
Advanced Functional Fabrics of America (AFFOA)

*COT-RCNGM & AFFOA:*

- COT-RCNGM invited to showcase student projects using smart fabrics and overall structure of COT-RCNGM during visit from U.S. Department of Defense, who funded AFFOA

- Dr. Karen Wosczyna-Birch is on the Education and Workforce Development Committee; charged with advising AFFOA on its education and workforce development investments
Clean Energy Smart Manufacturing Innovation Institute (CESMII)

Overview of CESMII:

- Mission: Ensuring the power of change and innovation is at the fingertips of every manufacturer.
- Funded by the U.S. Department of Energy
- Officially announced as a Manufacturing USA Institute on June 20, 2016
- Based out of Los Angeles, CA with 3 additional Innovation Centers
Clean Energy Smart Manufacturing Innovation Institute (CESMII)

*COT-RCNGM & CESMII:*

- Karen Wosczyna-Birch is Co-Chair of the national Outreach Standing Committee
- RCNGM presented during CESMII’s Connecticut site visit
- RCNGM participates in Annual Membership Meetings
- RCNGM participated in CESMII’s Roadmap development, particularly the Workforce Development component
- RCNGM is part of Northern Smart Manufacturing Innovation Center based out of Rensselaer Polytechnic Institute
Advanced Robotics for Manufacturing Institute (ARM)

ARM Overview:

• Mission: Assert U.S. leadership in advanced robotics manufacturing; empower American workers to compete with low-wage workers abroad; lower the technical, operational, and economic barriers for companies to adopt robotic technologies; and aid in the creation and sustenance of valuable manufacturing jobs.

• Funded by the U.S. Department of Defense

• Officially announced as a Manufacturing USA Institute on in January 2017

• Based out of Carnegie Mellon University
Advanced Robotics for Manufacturing Institute (ARM)

*COT-RCNGM & ARM:*

- Project funded by ARM: “Connecticut Apprenticeship Program for Robotics & Automation” (CAPRA); funded through Arm’s Education Workforce Development Project Call (ARM-EWD-17-02)

- Equipment for CAPRA funded by Connecticut’s Department of Economic & Community Development (DECD) – Robotic arms for 4 community colleges and Central CT State University

- Partners: Connecticut State Colleges & Universities System (Community Colleges and Central CT State University), University of Connecticut, and ABB Robotics

- Includes classroom education and on-the-job training for students

- Training on ABB Robotic Arms hardware and RobotStudio software for community college and Central CT State University faculty
  - Faculty incorporated ABB robotic arms and RobotStudio into curriculum for students

- Community college students are currently interviewing for apprenticeships at Connecticut manufacturers

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*[Logo for Advanced Robotics for Manufacturing Institute (ARM)]*
What are your next steps?

• Review the list of Manufacturing USA Institutes and their technology focus
  • These are national networks, so location is not a concern
  • Review the membership structures and benefits
  • Review Calls for Proposals and funded projects
  • Review resources that they have available

• Contact the membership coordinator for any additional information

• JOIN and be a part of manufacturing innovation!

Click here to review the Manufacturing USA Institutes: https://www.manufacturingusa.com/institutes
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