Highlights of Advanced Manufacturing and Engineering Technology Resources from ATE Centers

April 28, 2016
Webinar will begin at 3pm ET

CLICK HERE TO WATCH THE WEBINAR RECORDING

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE
Webinar Details

• For this webinar you will be in listen only mode using your computer or phone
• Please ask questions via the question window
• This webinar is being recorded – you will be sent a recording link
Brought To You By

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

With Additional Support by the ATE Collaborative Impact Project

Disclaimer: This material is based upon work supported by the National Science Foundation under Grants # 1205077 and # 1261893. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
The CCTA IS Led By

National Center for Convergence Technology (CTC) based at Collin College in Frisco, TX (lead)

South Carolina ATE National Resource Center (SCATE) based at Florence Darlington Technical College in Florence, SC

Florida ATE Center (FLATE) based at Hillsborough Community College in Tampa, FL

Bio-Link Next Generation National ATE Center for Biotechnology and Life Sciences (Bio-Link) based at City College of San Francisco in San Francisco, CA

Networks Resource Center based at the Maricopa Community College District in Phoenix, AZ
CCTA Purpose

• Respond to a request from the Department of Labor (DOL) to the NSF to have ATE Centers provide technical assistance services to DOL TAACCCT grantees
  – Success coaching
  – In-person convenings
  – Knowledge management /best practices
  – Peer-to-peer learning
CCTA Activities are Relevant for

• Department of Labor grants
• National Science Foundation Projects and Centers
• Workforce-oriented programs of all kinds
Deliverables

• Topical Webinars and Teleconferences On
  – Existing and new solutions
  – Live/recorded with attendee Q&A
  – Archived on www.atecentral.net

• Other online media including videos and transcripts
Deliverables Continued

• Invitations to regional discipline-specific conferences
• Identify and document best practices
• Host convenings
Poll #1: Your Affiliation

A. I am involved with an NSF grant
B. I am involved with a TAACCCT grant
C. Both
D. Neither
Overview

Looking for manufacturing education resources? All NSF ATE Centers develop a wealth of best and promising practices, skills alignments, curriculum, and other resources that support 2-year academic technical programs. Learn more about 6 Manufacturing focused centers, their resources and how best to access them in this fast paced lighting round type webinar.
Learning Objectives

At the end of this webinar, participants will:

1. Know how to access manufacturing-related resources from NSF ATE Centers
2. Discover and locate a variety of evidence-based research tools available for integration into technological education curricula
PRESENTERS

James Janisse
Moderator
Business & Industry Faculty, University of Wisconsin-Stout

Marilyn Barger
Principal Investigator (PI)
Florida Advanced Technological Education Center (FLATE)

Kris Frady
Director of Operations
CA2VES

Beverly Hilderbrand
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CARCAM

Jeremy Leffelman
Principal Investigator (PI)
360 Center

Monica Pfarr
Principal Investigator (PI)
WELD-ED

Karen Wosczyna-Birch
Principal Investigator (PI)
RCNGM
NSF ATE Program & ATE Centers

Partners with Industry for the NEXT American Workforce

www.atecenters.org
NSF ATE Centers

Advanced Manufacturing Technologies
Agricultural & Biological Technologies
Energy & Environmental Technologies
Engineering Technologies
Information Technologies
Learning, Evaluation & Research
Micro & Nano Technologies
Security Technologies
NSF ATE Advanced Manufacturing Centers and Project

www.atecentral.net
FLATE will be Florida’s leading resource for education and training expertise, leadership, projects, and services to promote and support the workforce in the high performance production and manufacturing community.

Impact locally. Lead nationally.
A.S. Engineering Technology Degree
Pathways to Manufacturing & Advanced Technology Careers
Meeting locations since 1996


CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

ATECENTERS
<table>
<thead>
<tr>
<th>Made in Florida STEM Lesson Plans</th>
<th>Career Education Resources</th>
<th>Modules for Advanced Technological Education</th>
<th>The Toothpick Factory</th>
<th>Student Activity Sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td>For Elementary, Middle &amp; High School Educators</td>
<td></td>
<td>A Simulating Game for Soft Skills</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry Tour Resources</th>
<th>Recruiting all GIRLS who love S.T.E.M.!</th>
<th>FLATE Presentations, Publications, Meetings &amp; Webinars</th>
<th>Professional Development Opportunities for Teachers</th>
<th>Camp Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find pre-tour lessons, post-tour surveys and many resources for all your Made in Florida tours!</td>
<td>Resources for GIRLS in STEM!</td>
<td>Resources for FLATE in STEM!</td>
<td>NEW! Summer Energy Camp for Teachers</td>
<td>Robotics &amp; Energy Camp Resources for everyone.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Read FLATE's Monthly Newsletter!</th>
<th>FLDOE Career Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLATE FOCUS</td>
<td>Florida's new education and career planning system!</td>
</tr>
</tbody>
</table>

www.flate.pbwiki.com
A.S. Engineering Technology Degree
Manufacturing & Advanced Technologies

Credential Alignment & Articulations
High School, Post Secondary Technical, A.S. levels
FLATE: Florida Advanced Technological Education Center of Excellence

www.fl-ate.org
www.madeinflorida.org
wwwflate.pbwiki.com
www.flate-mif.blogspot.com
CA²VES

Center For Aviation And Automotive Technological Education Using Virtual E-Schools
Providing research-centered resources and evidence-based leadership for 2-year colleges and the broader ATE community, by designing and developing state-of-the-art virtual reality-based modules that support automotive and aviation technological education.
Video Lectures
Interactive Assessments
Virtual Reality
A Novel Approach
Open Texts & ePUBs
Industry Backed
Instructor Tools & Analytics
• Career exploration
• Recruitment
• Introductory course materials
Virtual Reality Scenarios & Tools
iBooks and ePUBs

Compatible with:

- Windows
- Mac
- iOS

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

ATECENTERS | NSF
Increasing Diversity and Quality of the Advanced Manufacturing Pipeline
INDUSTRY FOCUSED EDUCATION FOR TECHNICAL CAREERS

Beverly Hilderbrand, Director/PI
Gadsden State Community College

www.carcam.org
CARCAM BEST PRACTICE GUIDES


Curriculum Review Process Guide

CGA Best Practice Guide
CARCAM
PARTNER COLLEGE NETWORK

- Bevill State Community College
- Calhoun Community College
- Central Alabama Community College
- Drake State Community & Technical College
- Faulkner State Community College
- Gadsden State Community College
- Jefferson State Community College
- Lawson State Community College
- Northeast Alabama Community College
- Shelton State Community College
- Southern Union State Community College
- Trenholm State Community College
- Wallace State Community College - Hanceville
AMP It Up! Advanced Manufacturing Partnerships: Education and Industry Working Together to Develop Highly-Skilled 21st Century Technicians

**Goals:**

1) Workforce development and STEM learning  
2) Career pathway  
3) Stackable credentialing  
4) Professional development
Alabama Automotive Manufacturing Technology AS Degree

I. General Education
   English/Speech
   Math
   Humanities/Ethics

II. AUT Core
   Automotive Concepts
   Lean Mfg./Safety
   Robotics

III. Specialization Tracks
   Drafting
   Electronics
   Industrial Automation

22 credit hours
Science
Social Science
Microcomputer Applications

21 credit hours
Electronics/AC/DC
Blue Print Reading
Programmable Logic Controllers (PLC)

21-33 credit hours
Machining
Welding
Warehouse Logistics*

Total 64 – 76 hours

* New
FUTURE TECHNOLOGIES IDENTIFIED

Future Technologies Identified by Employers
Industry: All Industries - Area: All Areas

Employers
3D Modeling (CAD/CAM) - 20
3D Printing - 15
Aircraft Technology - 10
Alternative Energy - 5
Building Information Modeling - 15
CNC Technology - 10
Electronics/Electrical - 5
Fiber Optics - 10
General Computer Advancement/Software - 5
GPS Operation of Machinery - 10
Home Automation - 5
HVAC & Refrigeration Advancements - 10
Interior Design - 5
Manufacturing Automation Technology - 15
Mapping - 10
Mobile Technology - 5
Miscellaneous - 10
Other - 5
Programmable Logic Controls - 10
Remote Work Technology - 5
Robotics - 10

Alabama Department of Labor
www.msamc.org
www.carcam.org
THANK YOU!
Beverly Hilderbrand, Director/PI
bhilderbrand@gadsdenstate.edu
256.439.6871
Questions?
360 Manufacturing and Applied Engineering
ATE Regional Center of Excellence

LEADING THE MANUFACTURING TALENT REVOLUTION
360 Manufacturing and Applied Engineering
ATE Regional Center of Excellence

• 360 is an innovative education and industry collaboration to RECRUIT, EDUCATE, and TRAIN workers for dynamic careers in advanced manufacturing.

• Focused on filling the advanced manufacturing pipeline with qualified technicians.
• 360 Consists of 15 MnSCU institutions (42% MnSCU)
• In existence since 2006
• State and federally funded
  – NSF Project “The eTECH Project” in 2009
  – NSF-ATE Regional Center 2012
360 | eTECH

- Online and hands-on manufacturing education
- Adults and high school students
- Print Reading simulation
- 4 certificates
  - Production Technologies
  - Automation Technologies
  - Machine Technologist
  - Welding Technology

https://360etech.org/
360 | Career Success Skills

• 26 online learning modules
• To graduate a better qualified employee
• Provide faculty & industry with curriculum that addresses important skills
• Topics include verbal communications, reliability, effective listening, and more

http://www.360mn.org/action/skill-development/
Dream It. Do It. Minnesota

- Adopt-A-School Guide
  - Framework to work with K-12
- Teacher Guide
  - Lessons, activities, and videos
- Youth Outreach Toolkit
  - Easy-to-use materials for influencers and youth
- Game app

http://www.dreamitdoitmn.com/
Manufacturing Career Tool

- Developing interactive career tool to introduce youth to manufacturing careers
- Focus group data
  - Web tool with facts and quiz
  - Showcase “A Day in the Life” in manufacturing
WELD-ED

National Center for Welding Education and Training
Vision
Weld-Ed is a national partnership of colleges, universities, professional societies, government, and private industry committed to increasing the number and quality of welding and materials joining technicians to meet industry demand.

Mission
Weld-Ed strives to improve the quality of education and training services to address the hiring and professional development needs of the welding industry.
Partners and Affiliates

American Welding Society (AWS)

Regional Centers

- Chattanooga State Technical Community College (TN)
- Lorain County Community College (OH)
- College of the Canyons (CA)
- Honolulu Community College (HI)
- Illinois Central College (IL)
- North Dakota State College of Science (ND)
- Texas State Technical College (TX)
- Yuba College (CA)
- Weber State University (UT)
- The Ohio State University (OH)

Affiliate network of over 80 education and industry
## National Occupational Overview
### Welder Occupations

<table>
<thead>
<tr>
<th>SOC Code</th>
<th>Description</th>
<th>2015 Jobs</th>
<th>2025 Jobs</th>
<th>Change</th>
<th>Openings</th>
</tr>
</thead>
<tbody>
<tr>
<td>47-2011</td>
<td>Boilermakers</td>
<td>17,245</td>
<td>18,288</td>
<td>1,043</td>
<td>8,980</td>
</tr>
<tr>
<td>51-2041</td>
<td>Structural Metal Fabricators and Fitters</td>
<td>79,977</td>
<td>86,841</td>
<td>6,864</td>
<td>40,213</td>
</tr>
<tr>
<td>47-4221</td>
<td>Structural Iron and Steel Workers</td>
<td>62,051</td>
<td>70,857</td>
<td>8,8066</td>
<td>30,227</td>
</tr>
<tr>
<td>51-4121</td>
<td>Welders, cutters, solderers and brazers</td>
<td>374,935</td>
<td>408,894</td>
<td>33,959</td>
<td>129,725</td>
</tr>
<tr>
<td>51-4122</td>
<td>Welding, soldering, and brazing machine setters, operators, and tenders</td>
<td>58,950</td>
<td>69,558</td>
<td>10,608</td>
<td>26,306</td>
</tr>
<tr>
<td>47-2152</td>
<td>Plumbers, pipefitters, and steamfitters</td>
<td>393,485</td>
<td>468,906</td>
<td>75,421</td>
<td>129,049</td>
</tr>
<tr>
<td>47-2211</td>
<td>Sheet Metal Workers</td>
<td>137,308</td>
<td>156,658</td>
<td>19,350</td>
<td>46,851</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1,123,952</strong></td>
<td><strong>1,280,002</strong></td>
<td><strong>156,050</strong></td>
<td><strong>411,353</strong></td>
</tr>
</tbody>
</table>

Source: EMSI Complete Employment – May 2014
## Welding Programs
### Student Enrollment/Completion Data

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</thead>
<tbody>
<tr>
<td>Secondary Enrolled</td>
<td>68,079</td>
<td>83,187</td>
<td>88,247</td>
<td>114,313</td>
<td>96,449</td>
<td>105,156</td>
</tr>
<tr>
<td>Secondary Completed</td>
<td>32,473</td>
<td>41,403</td>
<td>52,345</td>
<td>60,261</td>
<td>50,102</td>
<td>71,841</td>
</tr>
<tr>
<td>Post-Secondary Enrolled</td>
<td>25,180</td>
<td>29,228</td>
<td>43,465</td>
<td>51,358</td>
<td>69,672</td>
<td>53,919</td>
</tr>
<tr>
<td>Post-Secondary Completed</td>
<td>10,778</td>
<td>13,601</td>
<td>21,603</td>
<td>23,613</td>
<td>23,341</td>
<td>25,652</td>
</tr>
</tbody>
</table>

Source: Weld-Ed annual school survey
Faculty Professional Development
Summer One-Week Training:

Module # 1 – Welding Metallurgy

Module # 2 – Joining and Cutting Processes

Module # 3 – Design / Assembly / Robotic Welding

Module # 4 – Weld Quality and Inspection, Welding Codes, Specifications & Safety

Module # 5 – Laser Welding

Module # 6 – Instructional Design and Teaching Strategies for Welding Technicians

Module # 7 – Non Destructive Testing

Registration at www.weld-ed.org
Scholarships

• In 2015, there were more than 500 recipients, and over $700,000
• Total of 5,370 students and over $6.4 million in 25 years
FREE at CareersInWelding.com
Careers in Welding Mobile Exhibit

Tour Schedule at www.explorewelding.com

See more at www.explorewelding.com
COT-RCNGM Goals: Regional Center in New England

Goal One
- Student Recruitment & Persistence

Goal Two
- Professional Development

Goal Three
- Curriculum Development

Goal Four
- Dissemination – Regional Collaboration
WHO WE ARE:

**Middle Schools**
- Comprehensive Schools
- CPEP: Inner City After School and Summer Programs
- Skills21 at EDUCATION CONNECTION

**Secondary Schools**
- 17 Technical High Schools
- Comprehensive High Schools
- Career Technical Education (CTE) Pathways

**COT**
- Seamless Pathways that Include Stackable Credentials
  - 12 Community Colleges in CT
  - 8 Four-Year Universities
  - Regional Collaborations in ME, MA, RI, NH, VT
1. Student Recruitment & Persistence:

Teachers Guide with Curriculum and DVD

Manufacture Your Future 2.0

Resources: www.nextgenmfg.org
STUDENT EXPOS/SYMPOSIUMS: Model One

Benefits

✓ Appreciation for the manufacturing process
✓ Essential understandings of careers
✓ Current workplace practices and technologies
✓ Opportunity for students to network
✓ Opportunity to promote educational career pathways
✓ Exposure to your college campus and what you have to offer

MODEL 1: STATEWIDE: Recreation of a factory floor (pods)
CNC: CAD/CAM; Metal Stamping; Wire/Spring Electroplating Lasers; Injection Molding

3,000 students, three days
In kind: marketing, communications, public affairs
Cash support from RCNGM, Companies
Model Two: REGIONAL SYMPOSIUM MODELS AT HOST COMMUNITY COLLEGES (Two Formats)

A. Manufacturing Process Format
- 10-minute sequential presentations – how a product is made
- Company exhibits/demos
- College tour (if time)
- Highly structured/scheduled

B. Workshop Format
- 40-minute workshop presentations held concurrently
- Company exhibits/demos held concurrently
- General assembly (space/time allowing)
2. Professional Development

Faculty-Industry Externships

- Work Based Learning
- 4-Week full-time for faculty and teachers
- Curriculum Integration
- In partnership with industry
- Creates Long Term Education – Industry Partnerships

RESOURCE:

- BEST PRACTICE GUIDE AND CURRICULUM ON
  WWW.NEXTGENMFG.ORG
2. Professional Development/Marketing

High School Counselor Workshops

Workshop Model

- Host Community College: Overview & Tour by students and faculty
- Overview of Manufacturing Programs offered
- Job Placement with Salaries
- Guest Speakers from Local Manufacturers
- Improve Perception of Manufacturing
- DVD and Student Profiles
- BEST PRACTICES GUIDE ON: WWW.NEXTGENMFG.ORG
1. Summer Teachers’ One Week Dissemination Workshop
   - Teamwork and Professional Skills; Hands-on Workshops
   - Curriculum Development
   - Tunxis CC, Farmington CT – July 11-15, 2016
   - Other Resources: State and Regional Manufacturing Surveys: Industry Needs, Higher Education
     - Deloitte Surveys (2)
     - CT Business &Industry Association Surveys

2. MFG Workshops with CMCC, ME

3. Greater Hartford Maker Faire:
   - 2nd Annual: October 8, 2016

RESOURCES ON WWW.NEXTGENMFG.ORG

THANK YOU !!!!!
Questions?
MAY 25, 2016
Meeting Requirements, Exceeding Expectations: Understanding the Role of Evaluation in Federal Grants
External evaluation is a requirement of many federal grant programs. Understanding and addressing these requirements is essential for both successfully seeking grants and achieving the objectives of funded projects. In this webinar, we will review the evaluation language from a variety of federal grant programs and translate the specifications into practical steps. Topics will include finding a qualified evaluator, budgeting for evaluation, understanding evaluation design basics, reporting and using evaluation results, and integrating past evaluation results into future grant submissions.

Presenters:
Lori Wingate Director of Research The Evaluation Center at Western Michigan University

For Other Upcoming Webinars See:
http://www.atecenters.org/ccta
Join us in Pittsburgh, PA!

July 25-28, 2016

www.highimpact-tec.org
Register for HI-TEC and TAACCCT Convening

HI-TEC Conference July 27-28 in Pittsburgh, PA


Free follow-up TAACCCT technical assistance convening for all TAACCCT grantees and others who can benefit on Friday, July 29.
Q&A and Contacts

• Marilyn Barger, mbarger@hccfl.edu
• Kris Frady, frady@clemson.edu
• Beverly Hilderbrand, bhilderbrand@gadsdenstate.edu
• Jeremy Leffelman, JLeffelman@bemidjistate.edu
• Monica Pfarr, mpfarr@aws.org
• Karen Wosczyna-Birch, wosczyna-birchk@ct.edu
WEBINAR SURVEY

Please take a moment to help us become better
Highlights of Advanced Manufacturing and Engineering Technology Resources from ATE Centers

Thanks For Attending