



**ATECENTERS**

# 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](#)



# 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

**ATECENTERS**

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](http://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 lightning 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**  
P I & Executive Director  
Florida Advanced  
Technological Education  
Center (FLATE)



**Kris Frady**  
Director of Operations  
CA2VES



**Beverly Hilderbrand**  
Principal Investigator (PI)  
CARCAM



**Jeremy Leffelman**  
Principal Investigator (PI)  
360 Center

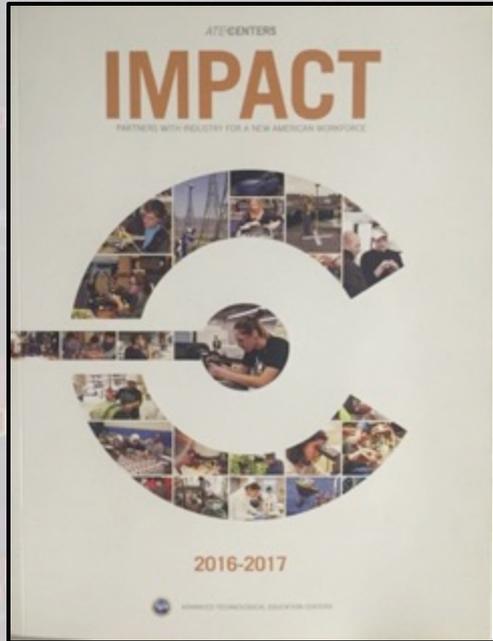


**Monica Pfarr**  
Principal Investigator (PI)  
WELD-ED



**Karen Wosczyzna-Birch**  
Principal Investigator (PI)  
RCNGM

# NSF ATE Program & ATE Centers



*Partners with Industry for the NEXT American Workforce*

[www.atecenters.org](http://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](http://www.atecentral.net)

# Florida Advanced Technological Education Center of Excellence



**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



★ PSC  
2008

TCC  
★ 2010

★ 2003, 2010  
FSCJ

GCCC  
★ 1997, 2003, 2014

FGC  
★ 2011

DSC  
★ 2000, 2005, 2011

CCF  
★ 2007

SSC  
★ 2008

Meeting locations since 1996

# FORUM on Engineering Technology

LSSC  
★ 2016

VC  
★ 1999, 2006, 2015

HCC  
★ 2005, 2013

BCC  
★ 2007

★ 2002  
SPC 2009, 2013

UCF  
★ 1996

PSC  
★ 2009, 2014

★ 1998, 2012  
SCF-M

IRSC  
★ 1998, 2006, 2012

★ 2004  
PBSC

★ 2015  
FKCC

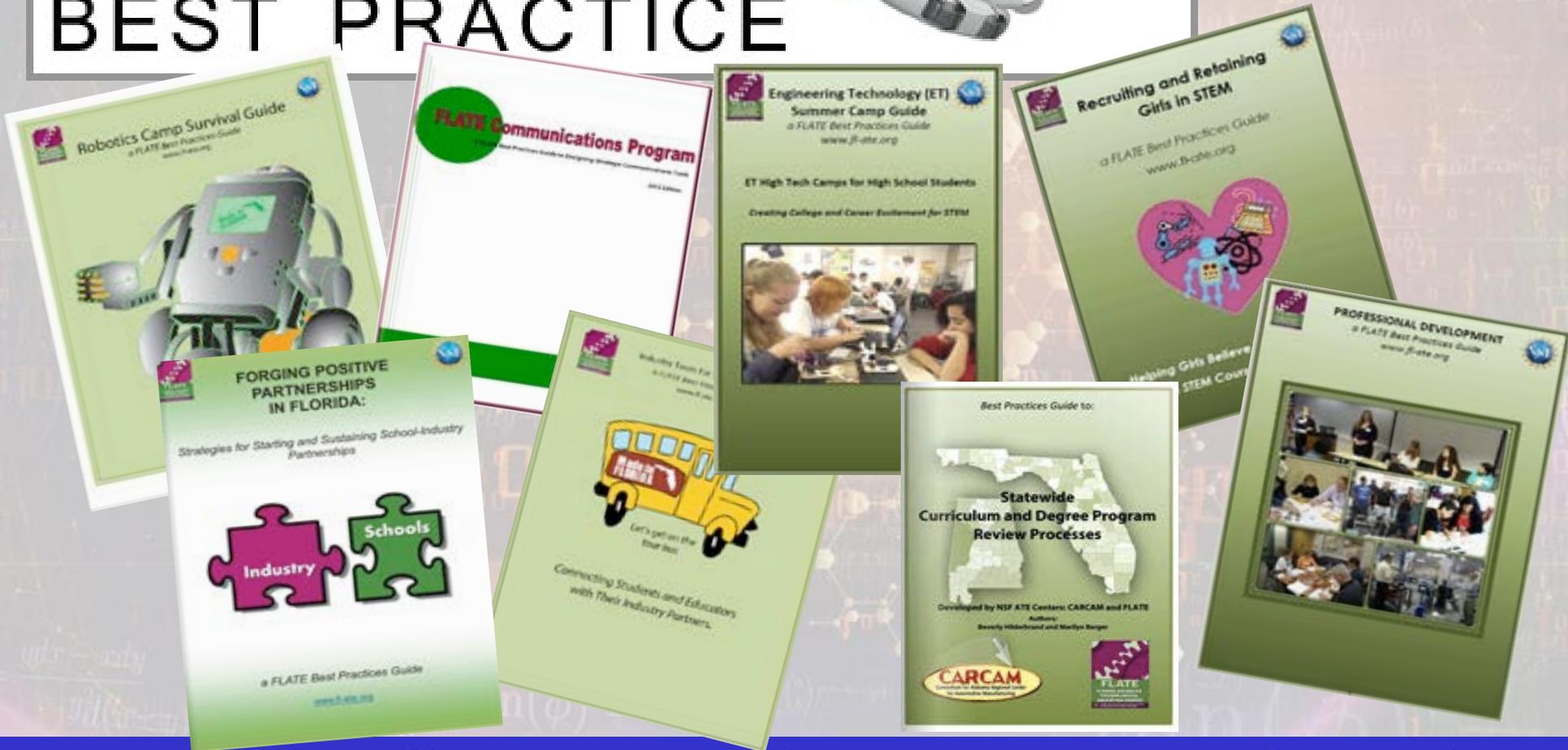
★ 2001



Learn. Share. Grow. Innovate.

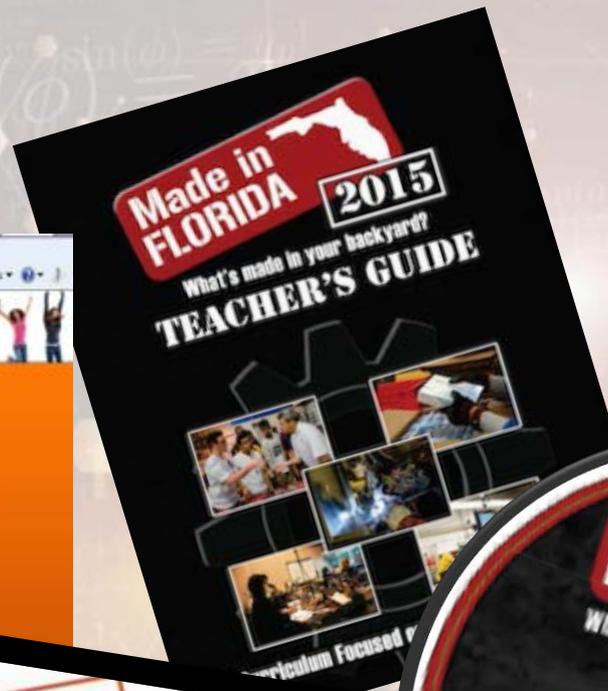
# FLATE GUIDES

## BEST PRACTICE



[www.fl-ate.org/Best\\_Practices/](http://www.fl-ate.org/Best_Practices/)

# Made in FLORIDA



# [www.madeinflorida.org](http://www.madeinflorida.org)



# FLATE's wiki

...full of great FREE RESOURCES for you!

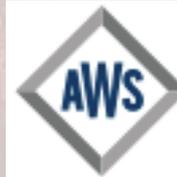
[www.flate.pbwiki.com](http://www.flate.pbwiki.com)

<p><b>Made in Florida STEM Lesson Plans</b></p>  <p>For Elementary, Middle &amp; High School Educators</p>	<p><b>Career Education Resources</b></p> 	<p><b>Modules for Advanced Technological Education</b></p> 	<p><b>The Toothpick Factory</b></p>  <p>A Simulating Game for Soft Skills</p>	<p><b>Student Activity Sheets</b></p> 
<p><b>Industry Tour Resources</b></p>  <p><b>MEG DAY</b> 2012-15 FLORIDA</p> <p>Find pre-tour lessons, post-tour surveys and many resources for all your <i>Made in Florida</i> tours!</p>	<p><b>Recruiting all GIRLS who love S.T.E.M.!</b></p>  <p>Resources for GIRLS in STEM!</p>	<p><b>FLATE Presentations, Publications, Meetings &amp; Webinars</b></p>  <p><b>FORUM</b> of Engineering Technology</p> 	<p><b>Professional Development Opportunities for Teachers</b></p>  <p><b>NEW! Summer Energy Camp for Teachers</b></p>	<p><b>Camp Resources</b></p>  <p><b>STEM Summer Camps</b></p> <p>Robotics &amp; Energy Camp Resources for everyone.</p>
<p><b>Read FLATE's Monthly Newsletter!</b></p> 		<p><b>FLDOE Career Resources</b> <u>Florida's new education and career planning system!</u></p>  <p>FLORIDA DEPARTMENT OF EDUCATION fldoe.org</p>		

# A.S. Engineering Technology Degree Manufacturing & Advanced Technologies



## Credential Alignment & Articulations High School, Post Secondary Technical, A.S. levels



**CNC Machining**

Last edited by [MARLYN BARGER](#) 2 weeks ago

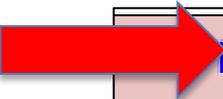
This page houses links to the new 2015 Florida Machining Technology Curriculum Frameworks for High School and PSAV hosted on the FDOE website. It also hosts the alignment and crosswalk of the Curriculum Frameworks standards and benchmarks to the skills in NIMS Machining Level 1 & Level 2 credentials.





[Link to FDOE Manufacturing cluster home page](#)  
\*\*NOTES to Educators and Users of the Alignments and Crosswalk Documents

FLORIDA SECONDARY LEVEL ALIGNMENTS/CROSSWALKS	FLORIDA POST SECONDARY LEVEL ALIGNMENTS/CROSSWALKS
<a href="#">Link to current FDOE Secondary Machining Technology Framework</a> <a href="#">Secondary Machining Technology Framework alignment and crosswalk to NIMS credentials</a> <a href="#">Secondary "High Level" Machining Tech-NIMS Alignment (alignment summary)</a>	<a href="#">Link to current FDOE Post Secondary Machining Technology Framework</a> <a href="#">Post Secondary Machining Technology Framework alignment and crosswalk to NIMS credentials</a> <a href="#">Post Secondary "High Level" Machining Tech-NIMS Alignment (alignment summary)</a>
<b>FLORIDA A.S. LEVEL ALIGNMENTS/CROSSWALKS</b>	
<a href="#">Link to current FDOE AS ET Degree Frameworks (w/ Mechanical Fabrication &amp; Design specialization)</a> <a href="#">ET Degree Mechanical Fabrication and Design Specialization alignment and crosswalk to NIMS credentials</a> Links to current FDOE Frameworks for College Credit Certificates (CCCs) under Mechanical Fabrication and Design Specialization: <a href="#">CNC Machinist / Fabricator (CCC - 0648051050)</a> <a href="#">CNC Machinist Operator / Programmer (CCC - 0615000010)</a> <a href="#">Mechanical Designer and Programmer (CCC - 0615080503)</a> CCC-NIMS alignment files: <a href="#">CNC Machinist Operator CCC alignment and crosswalk to NIMS credentials</a> <a href="#">CNC Machinist-Fabricator CCC alignment and crosswalk to NIMS credentials</a> <a href="#">Mechanical Designer and Programmer CCC alignment and crosswalk to NIMS credentials</a> <a href="#">Florida AS ET Degree "High Level" Alignment (alignment summary)</a>	
<b>FLORIDA CAPE FUNDING LISTS and STATEWIDE ARTICULATIONS</b>	
<a href="#">FDOE Website for CAPE Certification Lists (Secondary and post-secondary) and statewide articulations</a>	



**FLORIDA POST SECONDARY LEVEL  
ALIGNMENTS/CROSSWALKS**

[Link to current FDOE Post Secondary Machining Technology Framework](#)

[Post Secondary Machining Technology Framework alignment and crosswalk to NIMS credentials](#)

[Post Secondary "High Level" Machining Tech-NIMS Alignment \(alignment summary\)](#)



# FLATE: Florida Advanced Technological Education Center of Excellence



[www.fl-ate.org](http://www.fl-ate.org)

[www.madeinflorida.org](http://www.madeinflorida.org)

[www.flate.pbwiki.com](http://www.flate.pbwiki.com)

[www.flate-mif.blogspot.com](http://www.flate-mif.blogspot.com)



# CA<sup>2</sup>VES



## Center For Aviation And Automotive Technological Education Using Virtual E-Schools



CA<sup>2</sup>VES: The Center for

### **Aviation & Automotive Technological Education**

Using Virtual E-Schools





CA<sup>2</sup>VES: The Center for  
**Aviation & 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.



CUCWD: The Clemson University  
**Center for Workforce  
Development**



  
**Greenville  
Technical College**



**SPARTANBURG  
COMMUNITY  
COLLEGE**



# EducateWorkforce

A resource for technical colleges,  
and their students.



**Video Lectures**



**Virtual Reality**



**Open Texts & ePUBs**



**Interactive Assessments**



**A Novel Approach**



**Industry Backed**



CURRENT COURSES



Final Control Elements

AMTEC - AMT1064  
Started - Jan 04, 2016

View Course

Want to change your account settings? Click the arrow next to your username above.



Manufacturing Processes

Clemson - ME3120  
Started - Jan 06, 2016

View Course



Fundamentals of Manufacturing

Clemson - ME2220  
Started - Jan 06, 2016

View Course



Exploring Advanced Manufacturing

CUOWD - EAM101  
Started - Jan 02, 2015



Workforce Fundamentals

CUOWD - WF111  
Started - Apr 17, 2015



Manufacturing

CUOWD - MAN109  
Started - Jan 01, 2020

Overview

1. Reading Comprehension

2. Locating Information

2.1 Reading for Information Activity

2.2 Locating Information in Visual Representations of Data Activity

2.3 Charts Activity

2.4 Diagrams Activity

2.5 Maps Activity

2.6 Graphs Activity

2.7 Use of Materials Activity

2.8 Blueprints Activity

Summary

Assessment

Module Performance

3. Critical Thinking / Analysis Skills

4. Basic Math

5. Mathematical Applications

6. Introduction to Computing

7. Computer Application and Skills - Word

8. Computer Application and Skills - PowerPoint

Locating Information in Visual Representations of Data

OBJECTIVES

After completing this lesson, the learner will be able to:

- Explain the process for locating information on visual representations of data

Please visit the eBook for more information.



In addition to extracting information from documents, you may find yourself having to interpret charts, graphs and other visual representations of data in order to identify important information. These tasks are more complex and taking the information you need when you are overwhelmed with data can be a difficult and stressful task.

SUMMARY

- The process for locating information on an image involves identifying the type of visual display, reviewing the display, identifying information, determining if the data matches the information you need, and continuing to search and analyze.

Introduction and Overview

Exploring Advanced Manufacturing

Manufacturing Career Clusters

Introduction

Production

Maintenance, Installation and Repair

Quality Assurance

Logistics and Inventory Control

Process and Product Development

Health, Safety and Environmental Awareness

Module Summary

A Hands-on Virtual Experience

Next Steps

Introduction



If you are interested in a career in manufacturing, the next step is to determine what kind of career you may want to pursue. It takes a variety of individuals with different skills and responsibilities to keep a manufacturing facility running. Each manufacturing job can be categorized into six main career clusters: production, maintenance, quality assurance, logistics, process development, and safety and health. In each career cluster, there is a wide variety of jobs at multiple education levels to fit your career goals.

Whether you have a high school equivalent with professional certifications or a college degree, there are great career opportunities available. This section will give you a brief introduction to each career cluster, the types of job opportunities associated with each cluster, and the education needed to be competitive for particular jobs.

GETTING STARTED

Each of the buttons below contains a link to a dedicated page for that career cluster. The career cluster name has been abbreviated here for simplicity, but will reflect the full name on the linked page. To help you navigate to the career clusters that interest you, these buttons will be available at the bottom of each cluster page. The Home button will return you to this page and the eBook button takes you to the eBook Summary.



EducateWorkforce



## Instructor Dashboard

VIEW COURSE IN STUDIO

To gain insights into student enrollment and participation visit EducateWorkforce Insights, our new course analytics product.

COURSE INFO MEMBERSHIP STUDENT ADMIN ANALYTICS

### STUDENT GRADEBOOK

Click here to view the gradebook for enrolled students. This feature is only visible to courses with a small number of total enrolled students.

View Gradebook - Pre-computed grades available for Mar 15, 2016 at 22:58 EST

Recomputation of course grades will occur daily at the following times: 04:00:00 AM | 07:00:00 PM (EST)

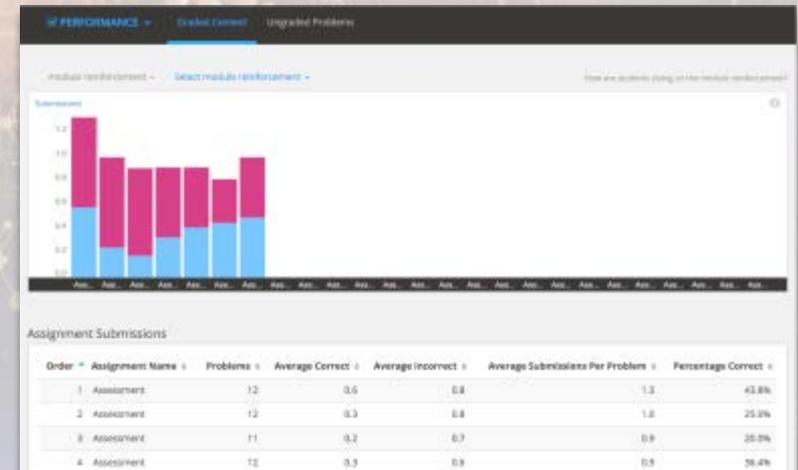
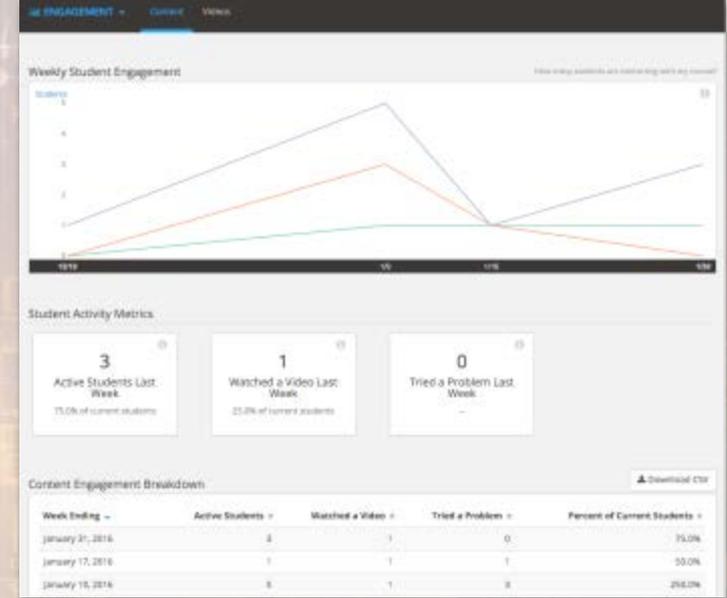
#### Gradebook

Current as of: Mar 15, 2016 at 22:58 EST

Recomputation of course grades will occur daily at the following times: 04:00:00 AM | 07:00:00 PM (EST)

Username	Full Name	Module 1			Module 2				Act
		1.1 Defining Manufacturing	1.2 Production Systems	Module Reinforcement (pts: 13)	2.1 Physical Properties	2.2 Chemical Properties	2.3 Mechanical Properties	2.4 Manufacturing Properties	
		Activity (pts: 13)	Activity (pts: 7)	Module Reinforcement (pts: 13)	Activity (pts: 4)	Activity (pts: 7)	Activity (pts: 3)	Activity (pts: 4)	
		15	7	2					
		15	7	4	4	7	3	3	

Export Grades



# Instructor Tools & Analytics





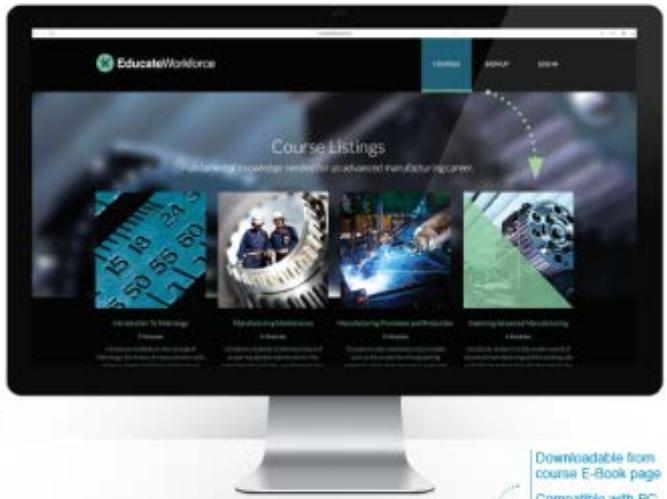
# Exploring Advanced Manufacturing

This course was developed through partnership between two National Science Foundation Centers for the Advancement of Technological Education.

Only on 

**CA<sup>2</sup>VES** | **FLATE**  
 clemson.edu/ca2ves | flate.org

- Career exploration
- Recruitment
- Introductory course materials



## About the course

Exploring Advanced Manufacturing is designed to expose students to career opportunities and the exciting advances in today's modern field of advanced manufacturing.

## How to register

- ▶ Go to [EducateWorkforce.com](https://www.educateworkforce.com)
- ▶ Select **"Courses"** menu and click on the Exploring Advanced Manufacturing course image (pictured to the right).
- ▶ Click **"Register for EAM101"**
- ▶ Follow the on-screen instructions to create an account or login to an existing account.

## What you will get

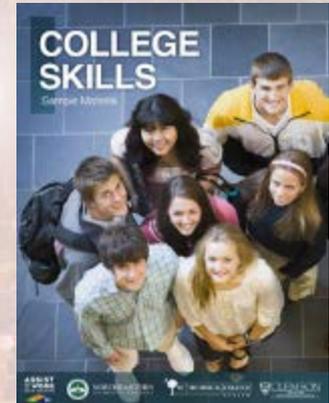
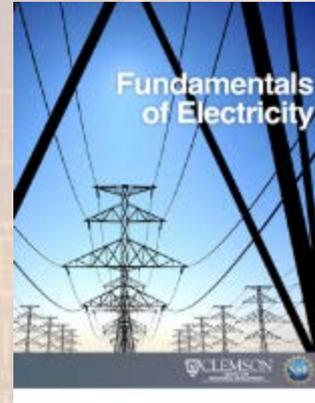
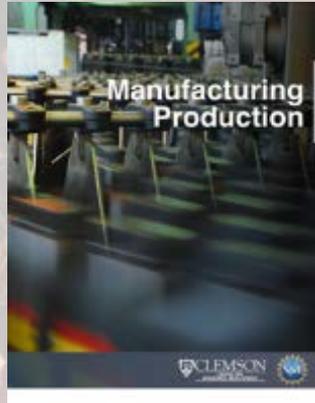
- 6 Modules
- 26 Videos
- 4 Assessments
- 1 Virtual Reality Simulation
- 1 Interactive EPUB

Downloadable from course E-Book page  
 Compatible with PC, Mac and iOS

# Virtual Reality Scenarios & Tools

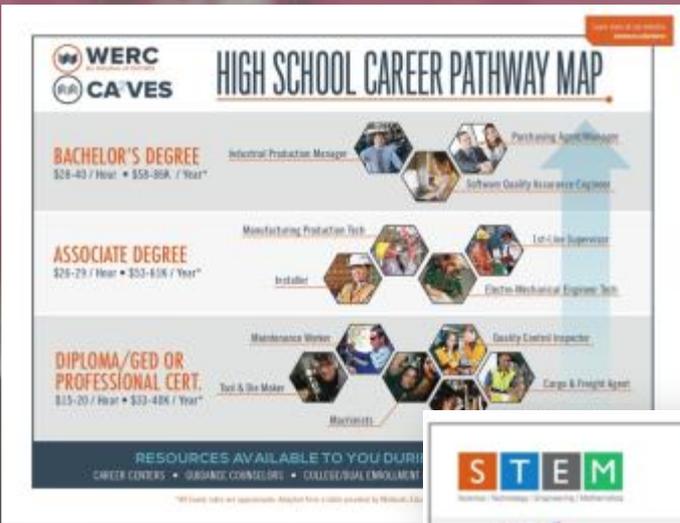


# iBooks and ePUBs



Compatible with:





**STEM**  
Science • Technology • Engineering • Mathematics

Sharing South Carolina STEM Related Activities

Get involved!  
Discover great activities in STEM happening near you.

- Day Camps
- School Events
- Options for All Ages
- Free and Paid Activities

Find Activities  
 Go  
 All Activities  
 Search Activities

Marketing Heading One  
 Best marketing tool in the space. This is what a great business or marketing tool can do. Best marketing tool in the space.

Second Marketing Heading  
 Best marketing tool in the space. This is what a great business or marketing tool can do. Best marketing tool in the space.

STEM | Science • Technology • Engineering • Mathematics



# Increasing Diversity and Quality of the Advanced Manufacturing Pipeline





# INDUSTRY FOCUSED EDUCATION FOR TECHNICAL CAREERS

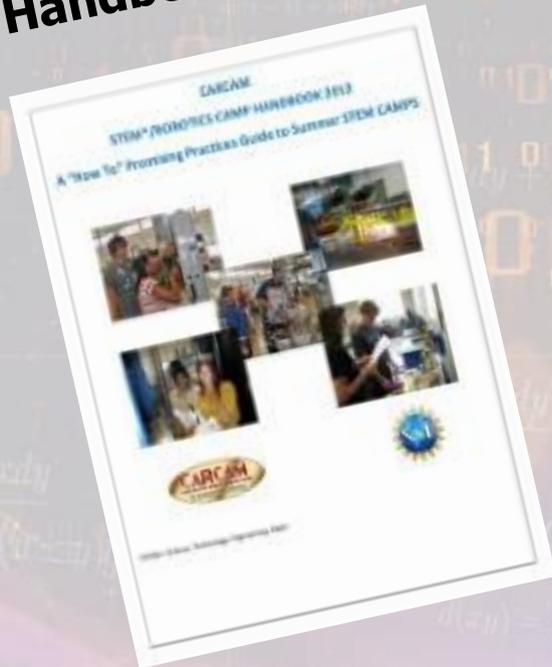
**Beverly Hilderbrand, Director/PI  
Gadsden State Community College**

[www.carcam.org](http://www.carcam.org)

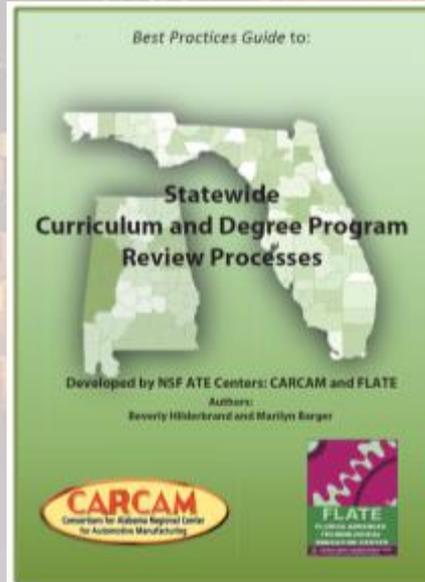


# CARCAM BEST PRACTICE GUIDES

## STEM/Robotics Camp Best Practices Handbook 2016



## Curriculum Review Process Guide

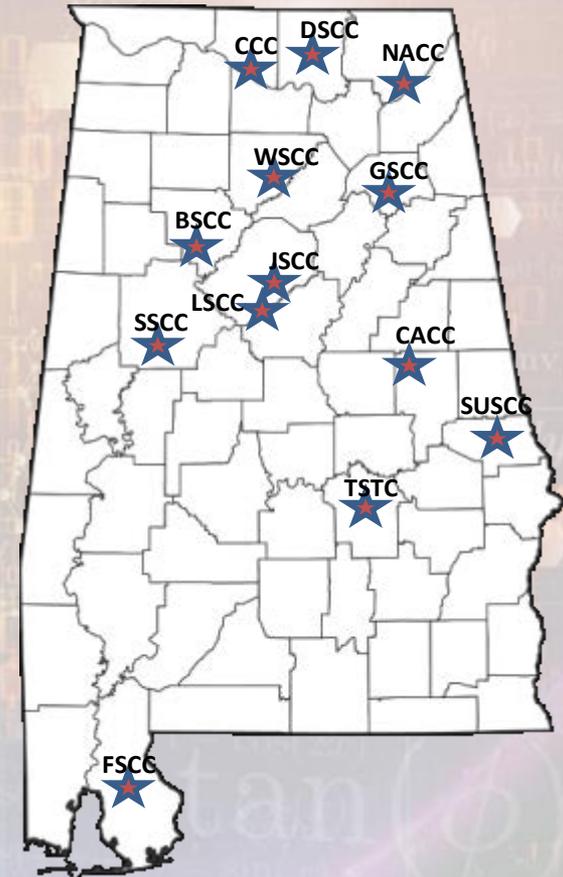


## CGA Best Practice Guide



# 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 21<sup>st</sup> 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

**22 credit hours**

Science  
Social Science  
Microcomputer Applications

## II. AUT Core

Automotive Concepts  
Lean Mfg./Safety  
Robotics

**21 credit hours**

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

## III. Specialization Tracks

Drafting  
Electronics  
Industrial Automation

**21-33 credit hours**

Machining  
Welding  
Warehouse Logistics\*

**Total 64 – 76 hours**

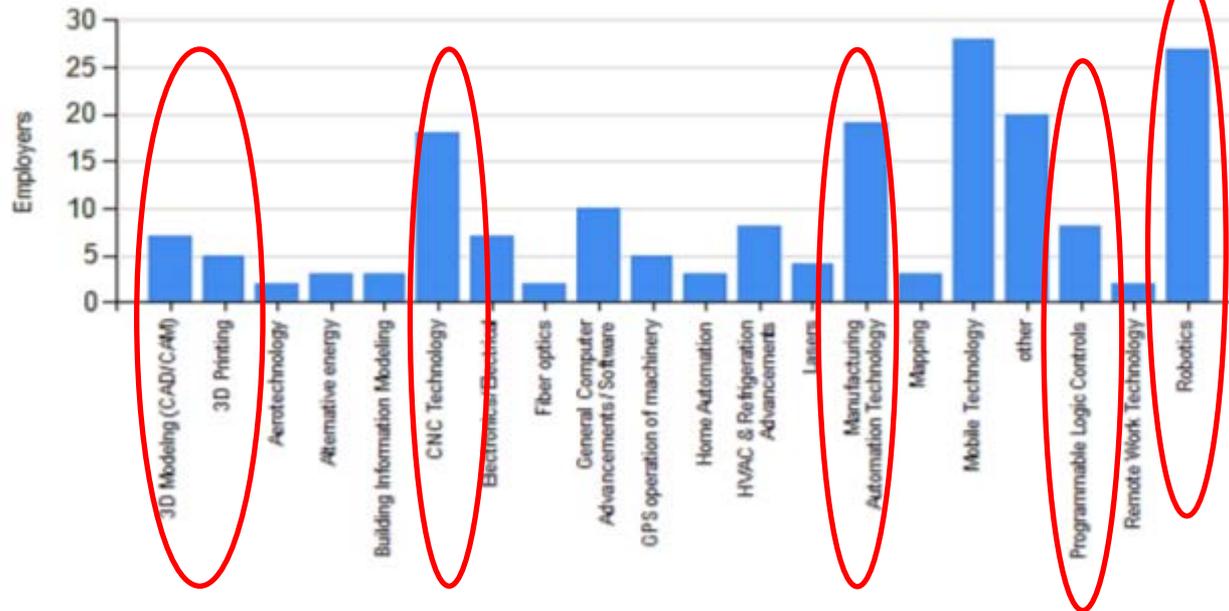
\* New

# FUTURE TECHNOLOGIES IDENTIFIED

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



Alabama Department of Labor



[www.msamc.org](http://www.msamc.org)

**M-S  
AMC**

NATIONAL INNOVATION. LOCAL IMPLEMENTATION.

Log-in Office 365 SharePoint

Home About **Resources** Partners News Insights A Look Ahead Media Contact **SEARCH**

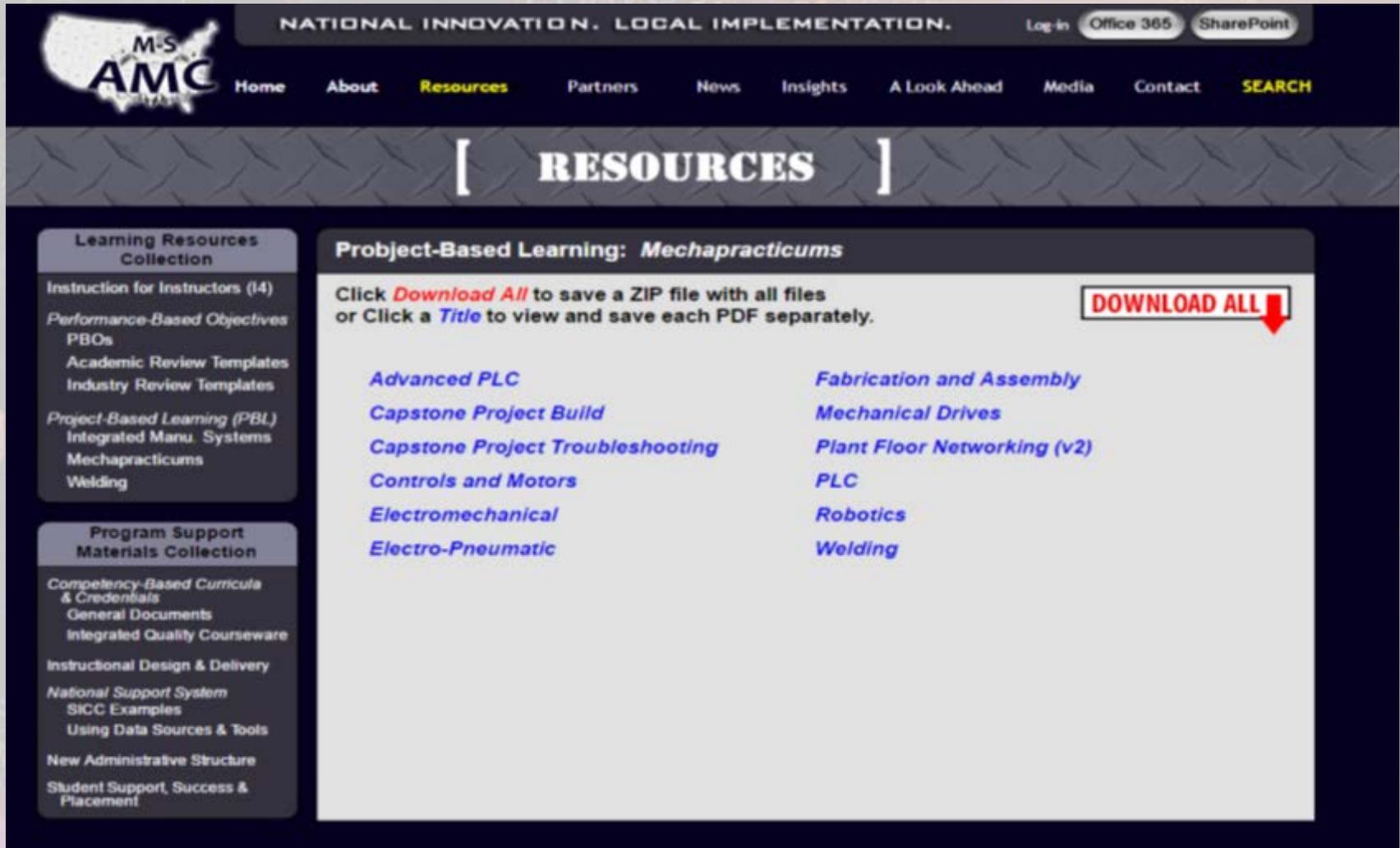
**GIRLS EMPLOYED IN MANUFACTURING**  
GSCC introduces students to manufacturing

**DASHBOARD**

**PBO**  
PERFORMANCE-BASED OBJECTIVES

**PBL**  
PROJECT-BASED LEARNING

**MEI**  
MANUFACTURING EDUCATION INSTITUTE



The screenshot shows the MSAMC website's Resources page. At the top, there is a navigation bar with the MSAMC logo, a tagline "NATIONAL INNOVATION. LOCAL IMPLEMENTATION.", and links for Home, About, Resources, Partners, News, Insights, A Look Ahead, Media, Contact, and a SEARCH button. Below the navigation bar is a large header with the word "RESOURCES" in a stylized font. The main content area is divided into two columns. The left column contains two sections: "Learning Resources Collection" and "Program Support Materials Collection". The right column features a section titled "Project-Based Learning: Mechapacticums" with a "DOWNLOAD ALL" button and a list of resource titles.

**MSAMC**  
NATIONAL INNOVATION. LOCAL IMPLEMENTATION.  
Log in Office 365 SharePoint

Home About **Resources** Partners News Insights A Look Ahead Media Contact **SEARCH**

## [ RESOURCES ]

### Learning Resources Collection

- Instruction for Instructors (I4)
- Performance-Based Objectives PBOs
- Academic Review Templates
- Industry Review Templates
- Project-Based Learning (PBL) Integrated Manu. Systems
- Mechapacticums
- Welding

### Program Support Materials Collection

- Competency-Based Curricula & Credentials
- General Documents
- Integrated Quality Courseware
- Instructional Design & Delivery
- National Support System
- SICC Examples
- Using Data Sources & Tools
- New Administrative Structure
- Student Support, Success & Placement

### Project-Based Learning: *Mechapacticums*

Click **Download All** to save a ZIP file with all files or Click a **Title** to view and save each PDF separately.

**DOWNLOAD ALL** ↓

<a href="#">Advanced PLC</a>	<a href="#">Fabrication and Assembly</a>
<a href="#">Capstone Project Build</a>	<a href="#">Mechanical Drives</a>
<a href="#">Capstone Project Troubleshooting</a>	<a href="#">Plant Floor Networking (v2)</a>
<a href="#">Controls and Motors</a>	<a href="#">PLC</a>
<a href="#">Electromechanical</a>	<a href="#">Robotics</a>
<a href="#">Electro-Pneumatic</a>	<a href="#">Welding</a>



[www.carcam.org](http://www.carcam.org)

**THANK YOU!**

**Beverly Hilderbrand, Director/PI**  
[bhilderbrand@gadsdenstate.edu](mailto:bhilderbrand@gadsdenstate.edu)

**256.439.6871**





# Questions?



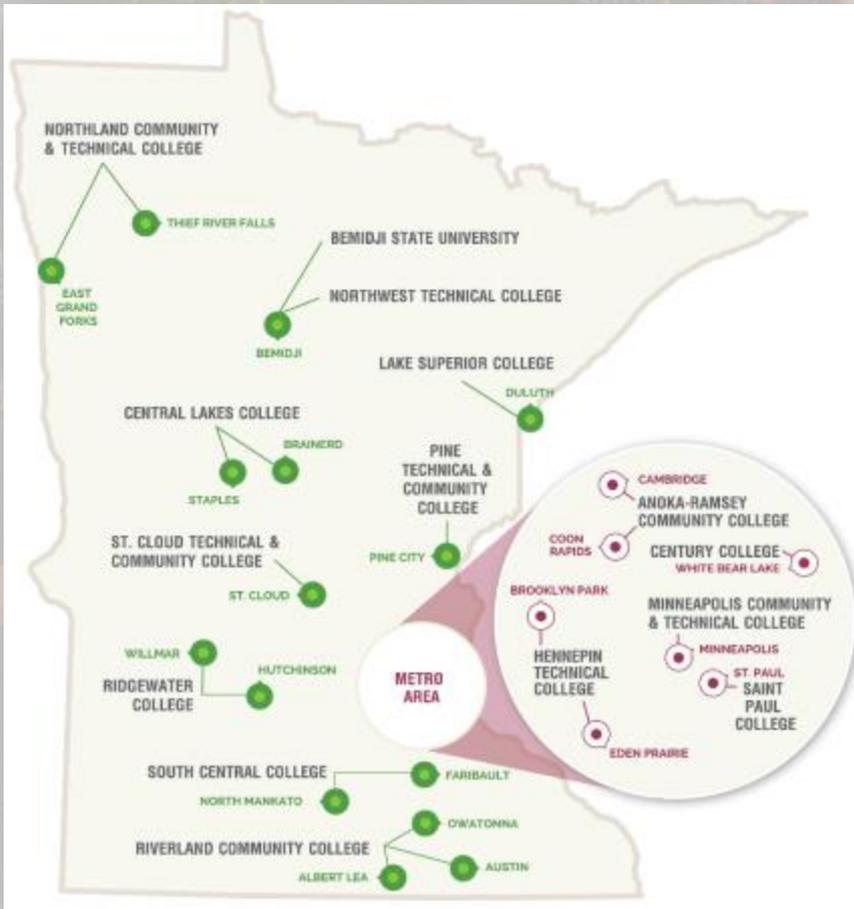
# 360 Manufacturing and Applied Engineering ATE Regional Center of Excellence



# 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

SOC Code	Description	2015 Jobs	2025 Jobs	Change	Openings
47-2011	Boilermakers	17,245	18,288	1,043	8,980
51-2041	Structural Metal Fabricators and Fitters	79,977	86,841	6,864	40,213
47-4221	Structural Iron and Steel Workers	62,051	70,857	8,806	30,227
51-4121	Welders, cutters, solderers and brazers	374,935	408,894	33,959	129,725
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders	58,950	69,558	10,608	26,306
47-2152	Plumbers, pipefitters, and steamfitters	393,485	468,906	75,421	129,049
47-2211	Sheet Metal Workers	137,308	156,658	19,350	46,851
	<b>Total</b>	<b>1,123,952</b>	<b>1,280,002</b>	<b>156,050</b>	<b>411,353</b>



# ***Welding Programs***

## ***Student Enrollment/Completion Data***

<b>Academic Year</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>2014-15</b>
<b>Secondary Enrolled</b>	68,079	83,187	88,247	114,313	96,449	105,156
<b>Secondary Completed</b>	32,473	41,403	52,345	60,261	50,102	71,841
<b>Post-Secondary Enrolled</b>	25,180	29,228	43,465	51,358	69,672	53,919
<b>Post-Secondary Completed</b>	10,778	13,601	21,603	23,613	23,341	25,652



# ***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

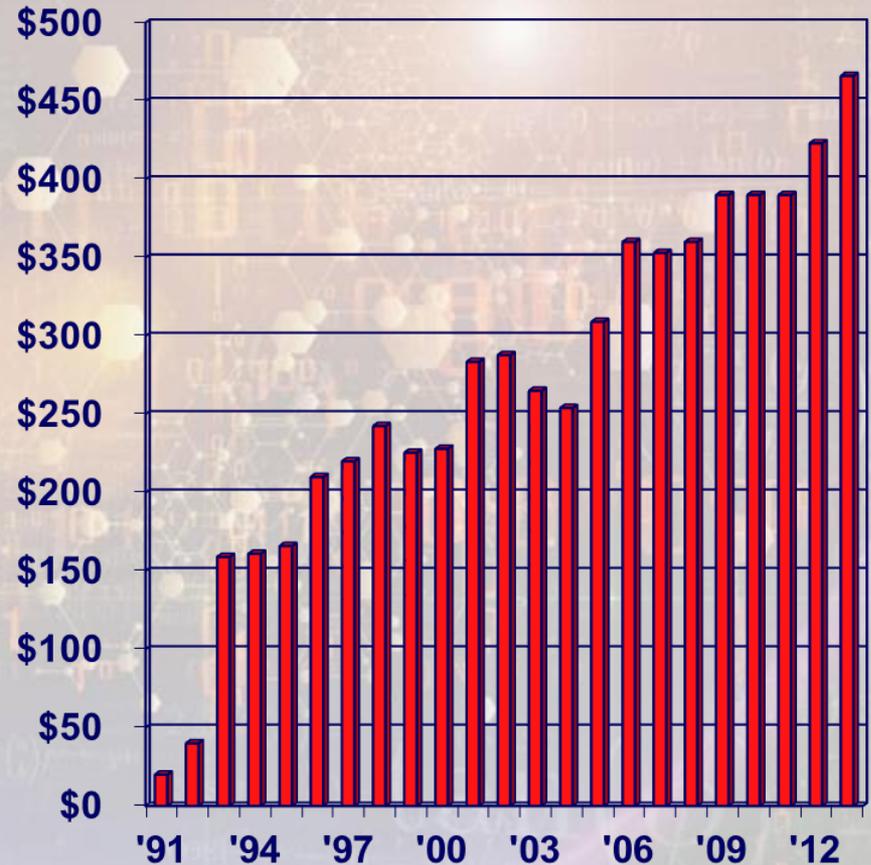
**Module # 7** – Non Destructive Testing

**Registration at**  
**[www.weld-ed.org](http://www.weld-ed.org)**

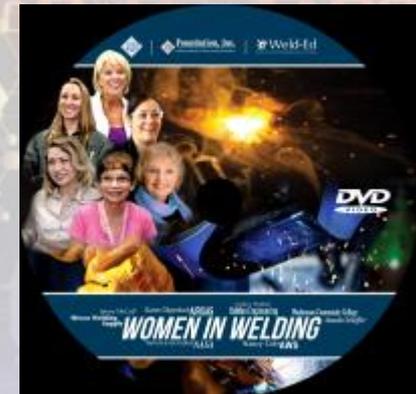
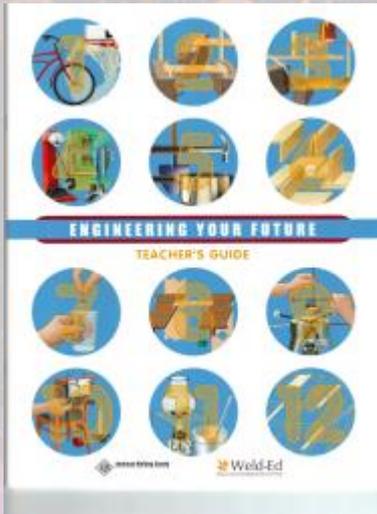
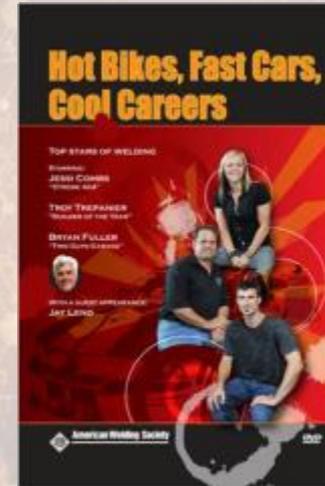
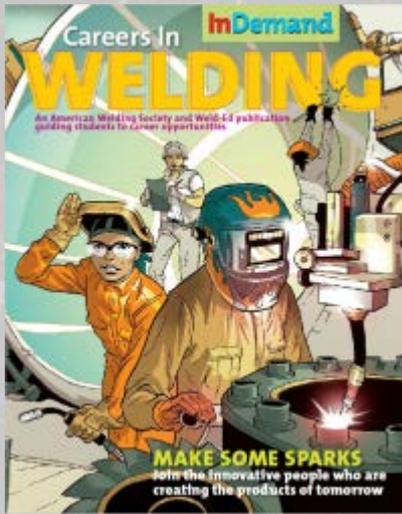


# Scholarships

- 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](http://www.explorewelding.com)



# RCNGM



## Regional Center for Next Generation Manufacturing



# 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

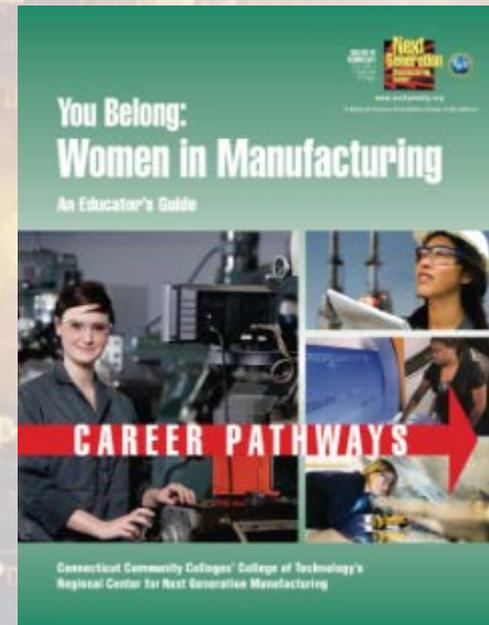
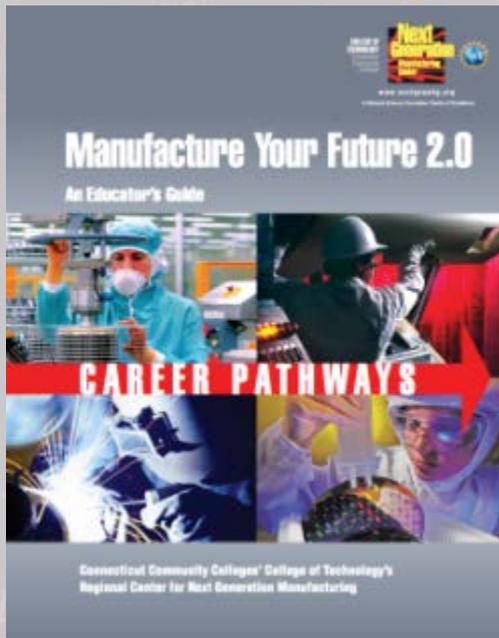
## COT

- 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*



## *You Belong: Women in Manufacturing*

Resources: [www.nextgenmfg.org](http://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](http://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](http://WWW.NEXTGENMFG.ORG)**



# OTHER RESOURCES:

## 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:

- 2<sup>nd</sup> Annual: October 8, 2016

[RESOURCES ON WWW.NEXTGENMFG.ORG](http://WWW.NEXTGENMFG.ORG)



THANK YOU!!!!





# Questions?





# Join Us – All Webinars 3 pm Eastern

**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](http://www.highimpact-tec.org)**



# Register for HI-TEC and TAACCCT Convening

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

Register at <http://www.highimpact-tec.org/registration.php>.

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](mailto:mbarger@hccfl.edu)
- Kris Frady, [frady@clemson.edu](mailto:frady@clemson.edu)
- Beverly Hilderbrand, [bhilderbrand@gadsdenstate.edu](mailto:bhilderbrand@gadsdenstate.edu)
- Jeremy Leffelman, [JLeffelman@bemidjistate.edu](mailto:JLeffelman@bemidjistate.edu)
- Monica Pfarr, [mpfarr@aws.org](mailto:mpfarr@aws.org)
- Karen Wosczyzna-Birch, [wosczyzna-birchk@ct.edu](mailto:wosczyzna-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

