STATEWIDE COLLABORATION FOR ADVANCED MANUFACTURING TALENT DEVELOPMENT

DR. ERIC A. ROE

ManufacturingTDI

Manufacturing Talent Development Institute



Advanced Manufacturing is a Major Economic Driver in the State

- □ Accounts for \$36.7 billion of the total output in the state;
- □ Responsible for 85% of Florida's exports
- Compensates 54.8% higher than other sectors in the state.
- On average, manufacturing jobs pay \$10,000 more than the average annual wage of all other non-farm jobs in Florida. Manufacturing \$53,284; Other \$42,312.
- Florida is the 4th largest manufacturing state in the U.S. in terms of establishments and 12th largest by employment.



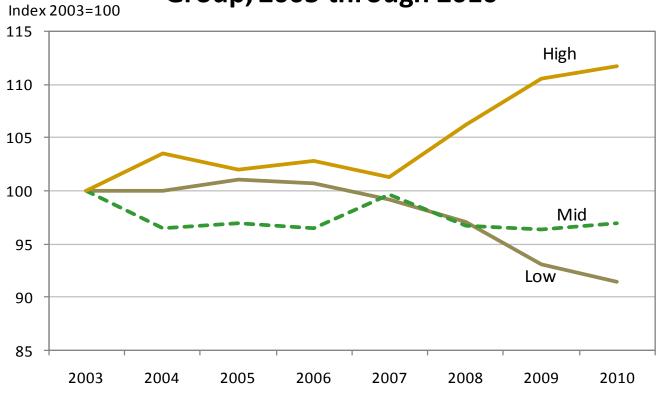
"With thousands of jobs available, but a lack of skilled and appropriately educated and trained workers, one of the critical impediments to greater manufacturing success in Florida is an industry-ready workforce."

- Steve Lezman

Chair, AIF Manufacturing-Aerospace-Defense Council

Manufacturing Jobs Require Higher Skills

Manufacturing Employment by Skill Group, 2003 through 2010



Sources: Chmura Economics & Analytics and Current Population Survey.

Why?

	Employers need qualified (skilled) workers	
$\overline{-}$	Need to replace retiring workers (~25% are ≥55)	
	High Schools, Technical Centers, & College programs can close the gap with the right tools	
	Alignment needed on academic and non-credit sides	
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Manufacturing Talent Development Institute



Statewide resource for cuttingedge talent development



Promote and support Economic Development



Public-Private Consortium

- Statewide nexus for industry knowledge related to workforce needs
- Develop and deliver <u>industry-</u> <u>driven</u> workforce development products
- Support pipeline development needs
- Expand dissemination of solutions/products
- Promote and support economic development
- Create revenue streams to become self-sustaining

State & Regional Community & Industry State colleges **Associations Economic** development organizations **Employers** & **Workforce Boards**

ManufacturingTDI Advisory Council

AIF - MAD Council

Bay Area Manufacturers Association

Beckman Coulter, Inc.

Boar's Head Provisions

Broward College

Cardio Command, Inc.

Career Tech. Education Foundation

Danfoss Turbocor

EDC of Tallahassee/Leon County, Inc.

Enterprise Florida

First Coast Manufacturers Association Pasco-Hernando Community College

First Coast Workforce Development

Florida's Natural Growers

Florida State College at Jacksonville

Hillsborough Community College

Jabil Circuits

Jacksonville Regional COC

Jefferson Project

Knight's Armament Company

Lakeland Electric

Lockheed Martin

Manufacturers Assoc. of Central FL

MarketCues, Inc.

Maxwell House/Kraft

Mid-Florida MSCA

Mileo and Associates

Mosaic Company

Pasco Economic Development Council Suncoast Workforce Board

Pasco-Hernando Jobs & Education

PEG Professional Engineering Group

Pharmaworks, Inc.

Plasma-Therm

Polk State College

Polk State Corporate College

Polk Works

Rockwell Automation

Sarasota-Manatee Area Manuf. Assoc.

School Board of Polk County

SiVance, LLC

Society of Manufacturing Engineers

South Florida Manufacturers Assoc.

Southwest Regional Manuf. Assoc.

St. Lucie Schools

State College of Florida

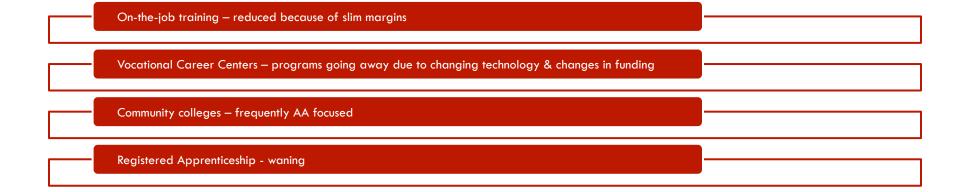
Tallahassee Community College

Tampa Bay Workforce Alliance

Valencia Enterprises/Valencia College

Weather Engineers, Inc.

Previous Approaches





State DOE

- · Curriculum Framework revisions · Statewide needs
- Coordination w/ Com. Colleges
- Implementation of CAPE
- Partnership with DOE
- Apprenticeship Programs



C.C. Academic Programs

- Articulations
- Curriculum Frameworks
- 1+1 programs
- Statewide Marketing
- Outreach

C.C. Workforce Training

- Alignment
- Articulation
- Industry Certifications
- Rapid Response
- Short-term



Workforce (DOL)

- Funding (IWT & EWT)
- Partnerships with DOE
- Banner Centers



System for Manufacturing



- Industry Certifications
- MSSC/SME/APICS/NIMS
- Industry standards



- Employer needs/skills gap
- One voice
- Regional Manufacturing **Associations**
- Incumbent training
- Outreach
- Support (time, \$, talent)

10



- Rigor & Relevance
- Articulation
- Career Academies
- Perkins Accountability
- Industry Certifications

Four-Year Institutions

- Academic & Continuing Ed.
- Alignment / Progression
- Effective Transferability
- 21st Century Skills

Roadmap to Talent

- Integrated academic and technical learning paths
- More available alternatives for learning, with more "on" and "off" ramps to higher education and lifelong learning systems to acquire new skills as technology advances
- The integration of nationally portable, industry-recognized credentials with educational pathways, leading to postsecondary credentials with real value in the workplace
- A heightened focus on Science, Technology, Engineering and Math skills

Florida's Unified Educational Pathways

- Industry Certification alignment and Statewide certification-based Articulation Agreements
- Workforce Training Curricula
- Updated Secondary Career Academy Programs and Funding (CAPE Legislation)
- Updated Post-Secondary Adult Vocational (PSAV) Certificate programs
- Formal Competency-Based Apprenticeship
 Programs
- Updated & New Statewide AS degrees
- AS to BS & BAS Degree Pathways
- Train-the-Trainer Courses





FLORIDA ADVANCED MANUFACTURING PATHWAYS

AUGNING EDUCATION, CERTIFICATION AND CAREER PATHWAYS

(Created by the Advanced Manufacturing Talent Development Institute and the FLATE Center)

EDUCATION & TRAINING PATHWAY		CERTIFICATION PATHWAY	\leftrightarrow	CAREER PATHWAY
MASTERS & PH. D. INCUMBENT TRAIN BACHELORS - BACHELORS - & ENGINEERING ENGINEERING OPERATIONS DISPLACED	HING .	(none – alignment with SME should be undertaken)	↔	Manufacturing Engineer Manufacturing Technologist
15 Short-term College Credit Certificate programs Year-1 Core aligned with the MSSC CPT to allow using IWT, ITA workfor industry certification articulated credit REGISTERED APPRENTICESHIP PROGRAMS Adult Mar Maintanance Eld Todhnisian & credit (who	ed for conal needs sertification where credentials of funding QRT, EWT, corce funds d college ere	In process of integration into the ET Degree specializations: O ISA CCST & ISA84 Safety O SME/ASQ/Shingo – Lean Bronze O IFPS FPCT O ASQ CQIA MSSC CPT * MSSC CPT *, OSHA10, Rockwell Automation, IFPS	\leftrightarrow	Management Supervisor of Production Manufacturing Technician Engineering Technician Maintenance Technician Quality Technician EIA (Electrical Instrumentation & Automation) Technicians
Mechanic/Millwright (Mosaic / Polk State) Machining (SFMA) PSAV PROGRAMS (Offered by Technical Centers and/or FCS Colleges) APT, Applied Welding, Machining Technology	agreements ↔ ↔	NIMS MSSC CPT* NCCER or AVVS NIMS	\leftrightarrow	 Mechanical Millwright Machinist Production Technicians Welders Machine Operators
HIGH S CHOOL CTE & CAREER A CADEMIES CAPE Legislation: Industry Certification + Career A cademy form at + Col = Bonus FTE Funding Automation and Production Technology (APT) FRAMEWORK Specifically Aligned with MSSC CPT PLTW Programs PLTW + MSSC CPT integration Engineering Technology Programs STEM/ENG with MSSC CPT integration	llege Credit ↔	PLTW Solidworks Auto Desk MSSC CPT * RTW (NCR C)	↔	Assemblers Lift Operators Entry Level Operator

^{*} Statewide Articulation Agreement - Attainment of certification results in 15 College Credit Hours toward the Technical Core of the Engineering Technology AS Degree

^{** 10} FCS Colleges - Polk State College, St. Petersburg College, State College of Florida, Hillsborough Community College, Brevard College, College of Central Florida, Florida Gateway College, Florida State College at Jacksonville, Pensacola State College, & Daytona State College

Manufacturing Cluster Career Academies

District	Site	Academy	
Alachua	Santa Fe High School	Institute of Biotechnology	
Columbia	Columbia High School	Applied Welding	
Dade	Miami Lakes Educational Center	Electronic Technology	
Dixie	Dixie County High School	Dixie Academy of Welding Technology	
Gulf	Port St. Joe High School	Shark Welding Academy	
Hillsborough	Jefferson High School	Applied Welding	
	Hillsborough High School	Applied Welding	
	Tampa Bay Technical High School	Applied Welding	
Lee	East Lee County High School	Academy of Engineering and Manufacturing	
	Ida S. Baker High School	Academy of Engineering and Manufacturing	
Marion	North Marion High School	Biotechnology Academy	in 23 of
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Okaloosa	Okaloosa Applied Technolos	acturing-related pro	
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Manufacturing / Pre-Engineering Career Academy

Academy of Design & Manufacturing Technology

Electronics Technology

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61 30		Spanish River Community High School	Biotechnology Academy
		Seminole Ridge Community High School	Biotechnology Academy
	Pinellas	Seminole Vocational Education Center	Electricity
	Polk	Lake Gibson Senior High School	Industrial Biotechnology Academy
	Putnam	Crescent City Jr.Sr. High School	Academy of Welding
		Palatka High School	Academy of Welding
[St. Johns	Ponte Vedra High School	Academy of Biotechnology and Medical Research
		First Coast Technical College	Welding

Treasure Coast High School

Taylor County High School

Mainland High School

St. Lucie

Taylor

Volusia

STEM Cluster Career Academies

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	Port Charlotte High School	Academy of Science, Technology, Engineering and Mathematics (STEM)	
	Charlotte Technical Center	Aviation	
Clay	Oakleaf High School	Academy of Aerospace Technology	
	Orange Park High School	Academy of Engineering & Computer Science	
	Keystone Heights Junior/Senior High School	<u>Technology Ac</u> ademy	
Dade	Hialeah Gardens Senior High School	Academy of Engineering (AOE) (NAF)	
1	Miami Sunset Senior High School	Academy of Engineering (AOE) (NAF)	
1	North Miami Senior High School	Aerospace Science & Enginering	
1	Miami Lakes Educational Center	Cambridge Engineering	
1	Dr. Michael M. Krop Senior High	Communications Technology	
1	Felix Varela Senior High School	<u>Engineering</u>	
1	Miami Central Senior High School	<u>Engineering</u>	
1	Miami Coral Park Senior High	<u>Engineering</u>	
1	Coral Reef Senior High School	<u>Engineering</u>	
1	Robert Morgan Educational Center	<u>Engineering</u>	
	Hialeah Senior High School	Engineering, Construction, Science & Math	
Duval	Frank H. Peterson Academies of Technology	Aviation Career Academy (ACA)	
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	Olympic Heights Community High School	Engineering Academy / Project Lead The Way (PcTW)
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incle	Lake Many High School	Greece and Technology Academy
ria .	Deltona High School	Academy of Drafting & Related Occupations
	Seabresce High School	<u>krademu of Draibing/Nursrative Design</u>
	New Smyrna Beach High School	Scaleny of Engineering & Design (PCTIS)
	DeLand High School	Engineering Academy - Drafting Mustrative Design

Engineering Technology A.S./A.A.S Degree

I. General Education – 15 - 18 credit hours

English Science

Math Social Science Humanities



II. E.T. Core - 18 credit hours

Computer Aided Design Electronics

Manufacturing Proc. & Materials Quality

Mechanics & Instrumentation Safety



III. 7 Specialization Tracts – 24 to 27 credit hours

Advanced Manufacturing

Advanced Technology

Electronics

Mechanical Design & Fabrication

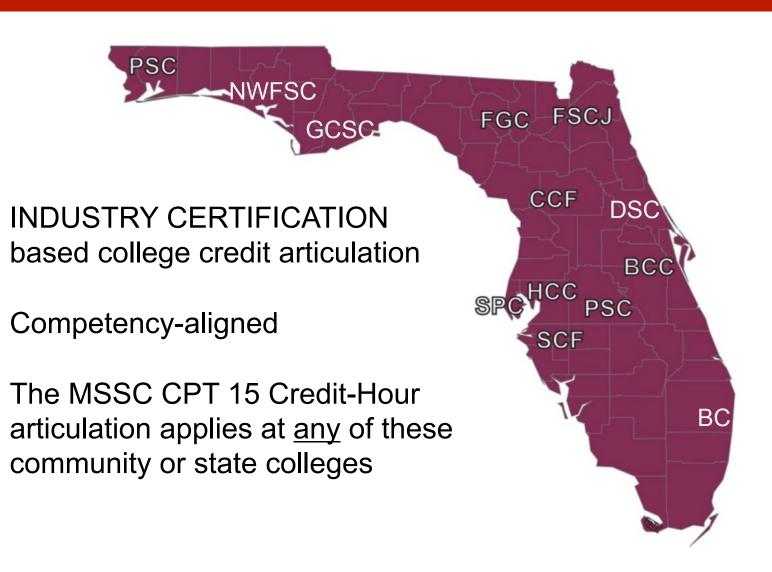
Digital
Design and
Modeling

Quality

Biomedical Systems

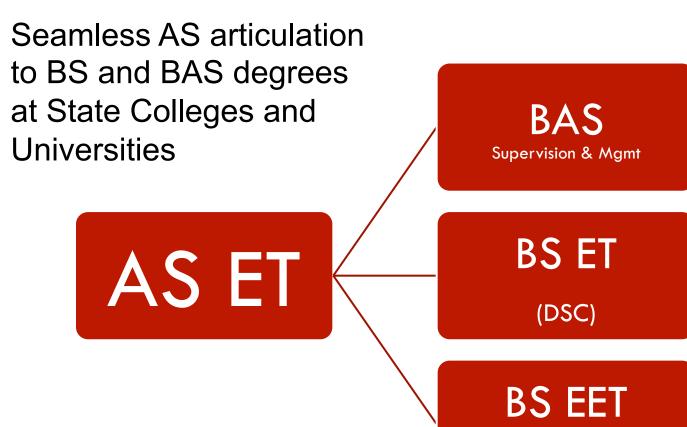
Alternative Energy







Pathways to 4 year degrees



(DSC & MDC)

Apprenticeship Program

(Mosiac Corp.)









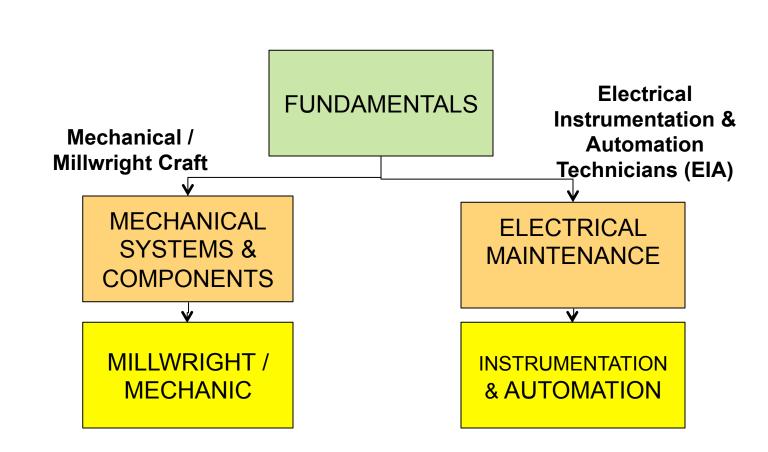






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Apprenticeship Pathways















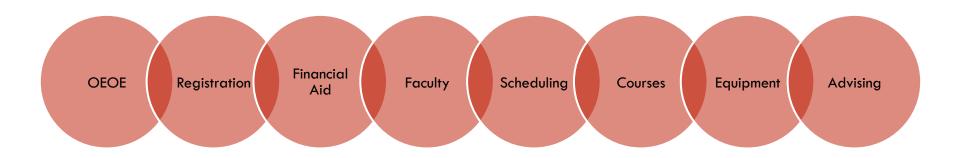


With these credentials in hand the Journeymen apprenticeship graduates can avail themselves of the pathways into college as part of Florida's unified pathway for manufacturing education.

- 15 Credit Hours for the MSSC CPT statewide articulation
- + 16 Credit Hours in local articulation
- = 31 Credit Hours towards an AS in Eng Tech.

OE/OE Challenges

Engineering Technology OE/OE



Modular * Competency-Based * SELF-PACED * OPEN-ENTRY / OPEN-EXIT * Faculty Mentored * Learner-centered

Unified Educ./Training Pathways

PETEC

Polk
Engineering
Technologies
Education
Council







Corporate, Professional and Continuing Education

- Nearly every community/state college and university offers non-credit training
- These programs serve both incumbent and displaced workers





Unified Educ./Training Pathways



High School Career Academies



Technical Center Certificate Programs



Registered Apprenticeship



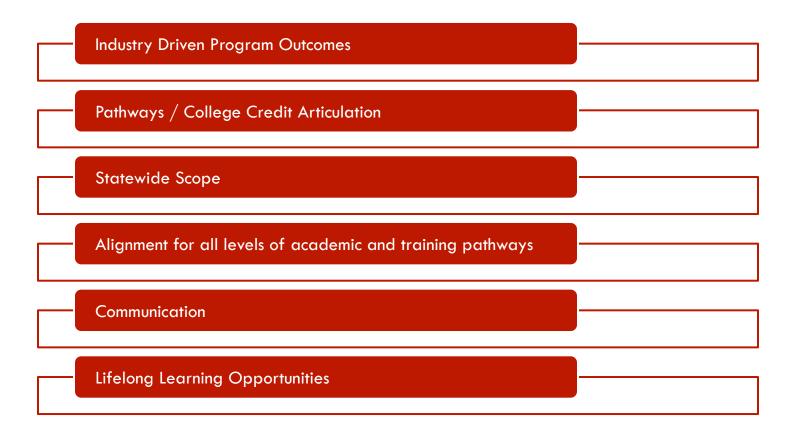
Workforce
Training for
displaced
&incumbent
workers



College
Degree and
Corporate
Training

Industry Certification Alignment & College Credit Articulation

Benefits



Industry Demand

This system only works if industry creates the "pull" on the system...

•The integration of nationally portable, industry-recognized credentials with educational pathways, leading to postsecondary credentials with real value in the workplace

Thank you!



Manufacturing Talent Development Institute Polk State College

Dr. Eric Roe, P.I./Director
(863) 669-2838
roe@ManufacturingTDl.com or eroe@polk.edu

www.ManufacturingTDI.com