

Florida's Exemplary Manufacturing Career Pathways

Industry-aligned, credential-based technical education

Marilyn Barger, Ph.D., P.E., CPT

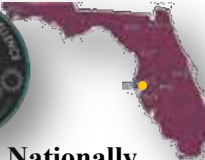
Executive Director and P.I.

barger@fl-ate.org

www.fl-ate.org

FLATE

Florida's Advanced Technological Education Center of Excellence



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NSF Advanced Technological Education



Partners with Industry for a new American Workforce



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VISION

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.



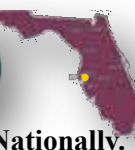
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Outreach ♦ Curriculum Reform ♦ Professional Development



Tell | **Teach** | **Train**

Advancing Excellence in Engineering Technologies



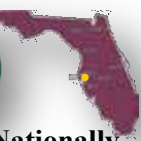
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What is manufacturing?

When we think of manufacturing – we think of **PRODUCTION** – how things are made

Manufacturing is a process that takes raw **materials** and **turns** them into (useful) products. It implies **mass production**, as in making products by **hand** or with the help of **machinery**.

MANUFACTURING is changing raw or processed materials into products people can use or just want! This includes cell phones, **computers**, jeans, **orange juice**, jewelry, **cosmetics**, **cars**...you name it. Everything is manufactured and **YOU** could be part of the action!



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What is manufacturing?



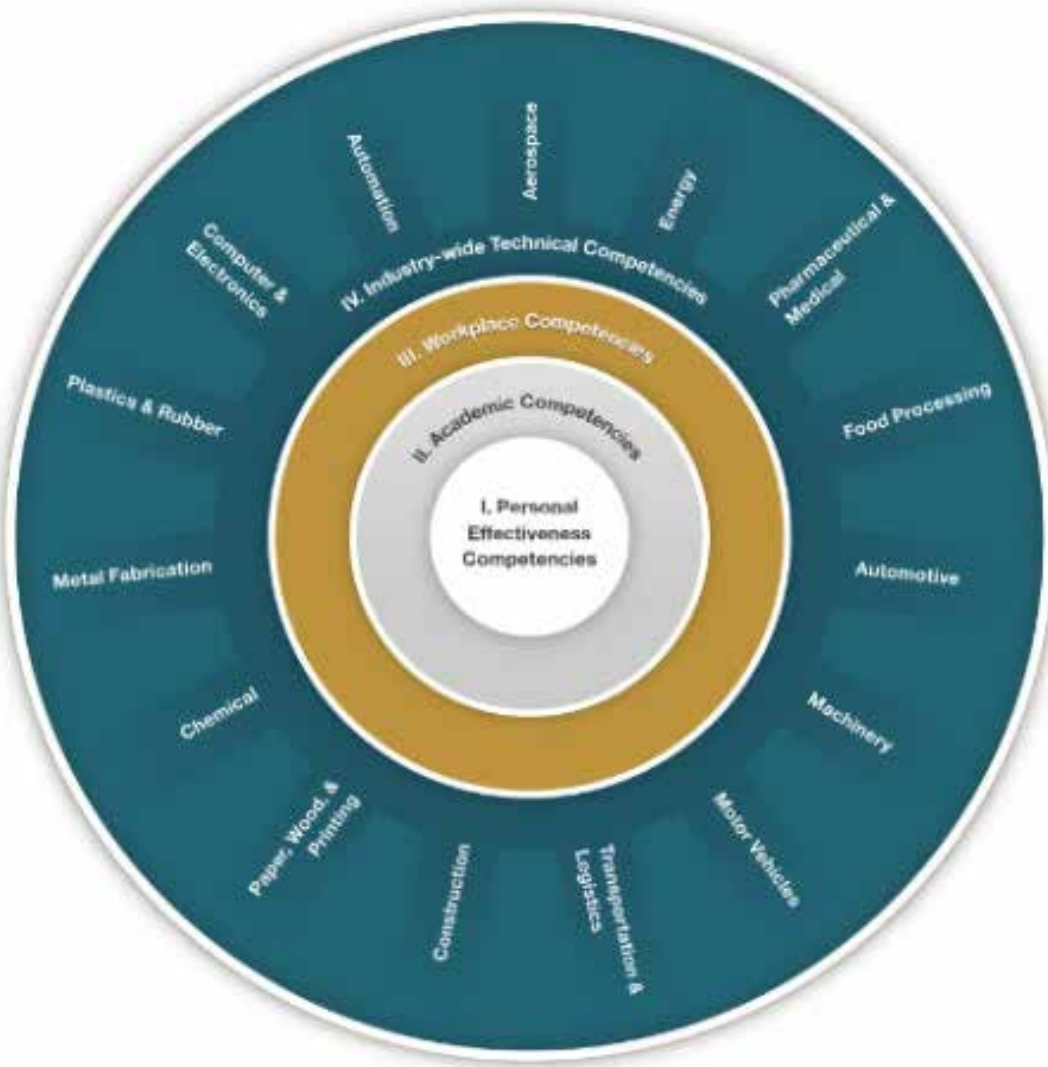
- Engineering & Design
- Product Development
- Business Services
- Information Technologies
- Human Resources
- Construction
- Building Facilities
- Legal
- Packaging
- Marketing
- Logistics & Transportation
- Environmental Health & Safety

BUT - there is much more



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NAM: National Perspective



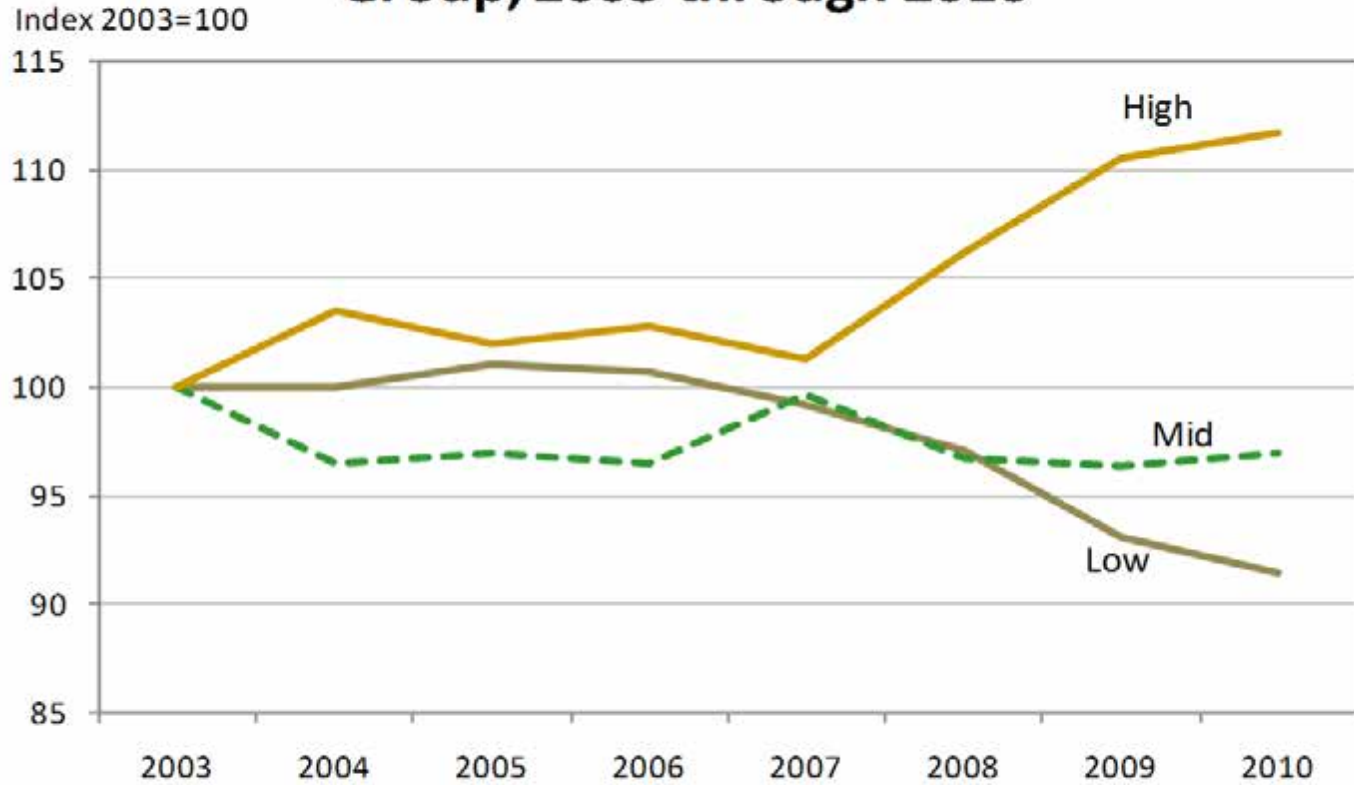
- Automation
- Aerospace
- Energy
- Pharmaceuticals & Medical
- Food Processing
- Automotive
- Machinery
- Motor Vehicles
- Transportation & Logistics
- Construction
- Paper, Wood, & Printing
- Chemical
- Metal Fabrication
- Plastics & Rubber
- Computer & Electronics



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Manufacturing Jobs Require Higher Skills

Manufacturing Employment by Skill Group, 2003 through 2010



Sources: Chmura Economics & Analytics and Current Population Survey.



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Advanced Manufacturing is a Economic Driver in Florida

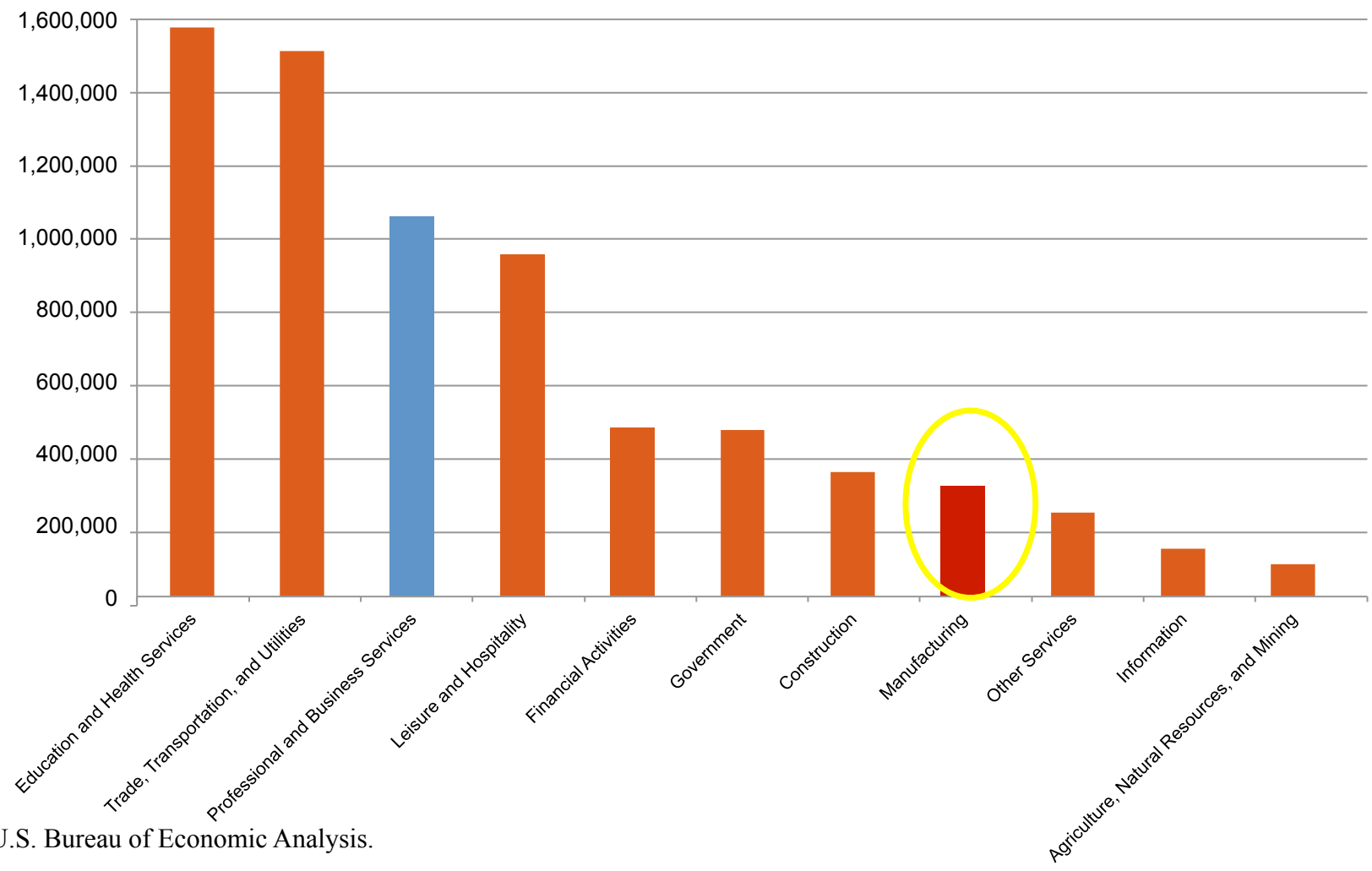
- ❖ Florida Manufacturing Establishments: **14,324**
- ❖ Manufacturing Employment: **306,800**
- ❖ **\$36.7 billion** of the total state output
- ❖ Percent of Florida exports: **85%**
- ❖ Manufacturing Average Annual Compensation: **\$62,859** (54.8% higher than other sectors)

Source: U.S. Bureau of Economic Analysis.



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Adv Manufacturing is the 8th Largest Employer in the State



Source: U.S. Bureau of Economic Analysis.



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Roadmap for Manufacturing Education

- ❖ Integrated academic and technical learning pathways
- ❖ More focus on STEM (Science, Technology, Engineering and Math) education
- ❖ More integrated career and education pathways to higher education and lifelong learning
- ❖ Integration of nationally portable, industry-recognized credentials aligned to educational programs
- ❖ Deep engagement of industry with education



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21st Century Manufacturing

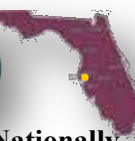
PRODUCTION PATHWAYS

- Production Planning & Control
- Manufacturing Engineering
- Maintenance, Installation, Repair
- Quality Assurance
- Logistics and Inventory Control
- Safety & Environmental Assurance



SAMPLE OCCUPATIONS

Machinist
Manufacturing Engineer
Automated Process Technician
Production Engineer
Production Technician
Welding Technician
Quality Technician
Industrial Maintenance Tech



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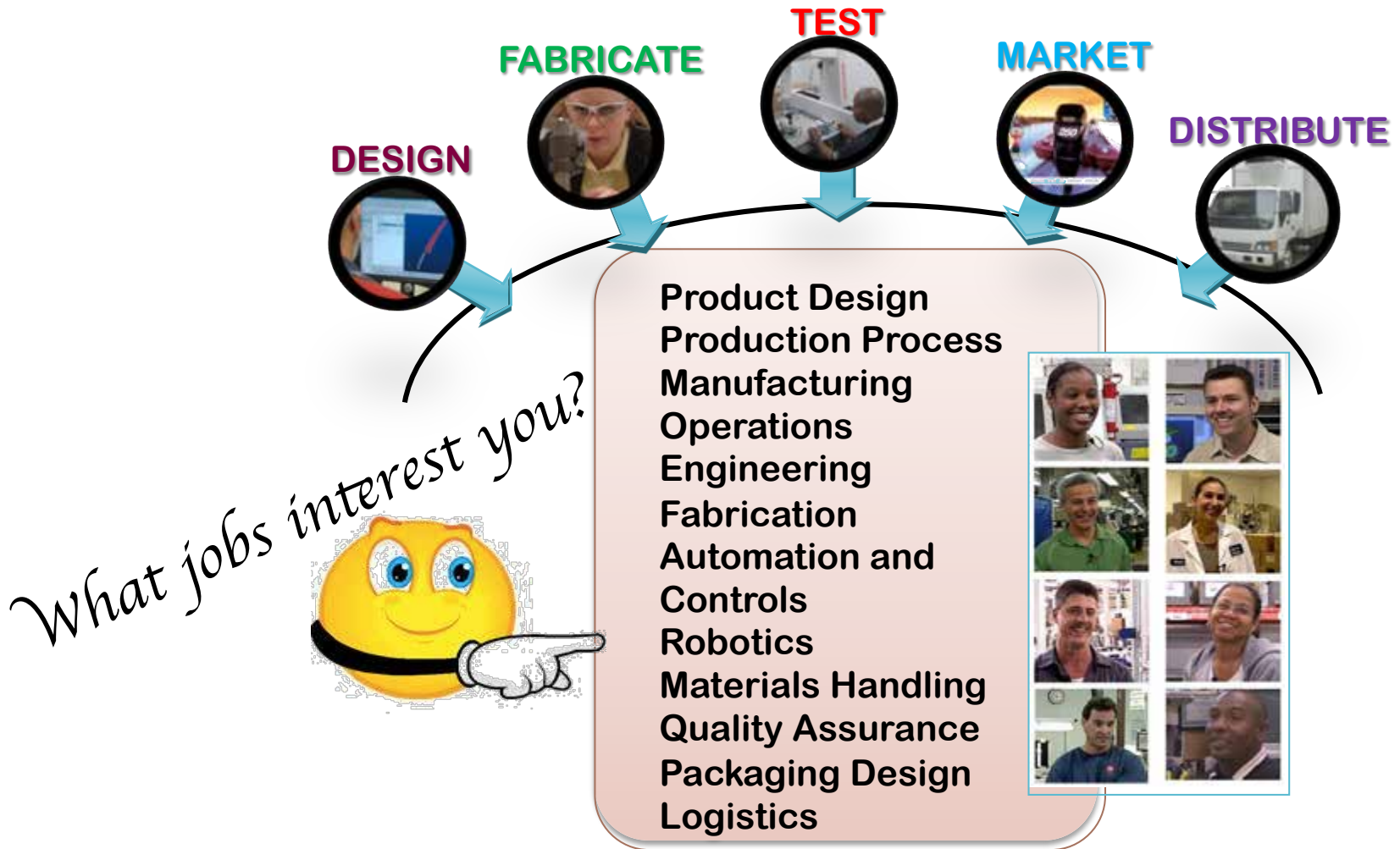
Do what you in a manufacturing career

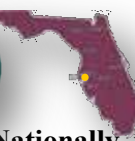
<p>Aviation & Aerospace</p> 	<p>Packaging, Beverage, Food & Pharmaceuticals</p> 
<p>Medical Devices & Equipment</p> 	<p>Machining & Product Fabrication</p> 
<p>Transportation & Logistics</p> 	<p>Leisure & Entertainment</p> 
<p>Electronics, Computers & Electrical</p> 	<p>Product Design & System Integration</p> 



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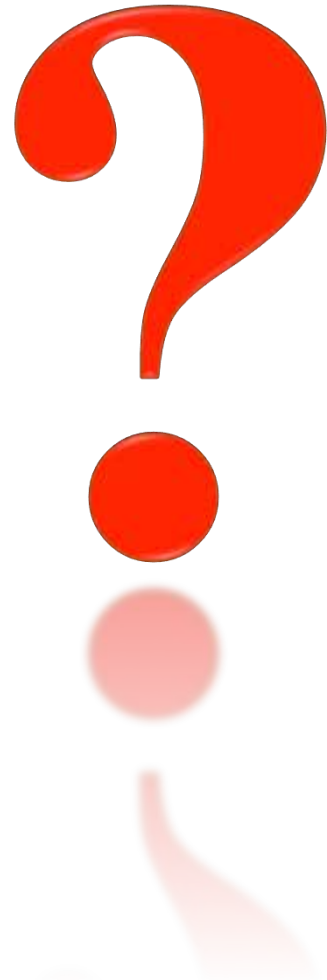
What is manufacturing?





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Why?





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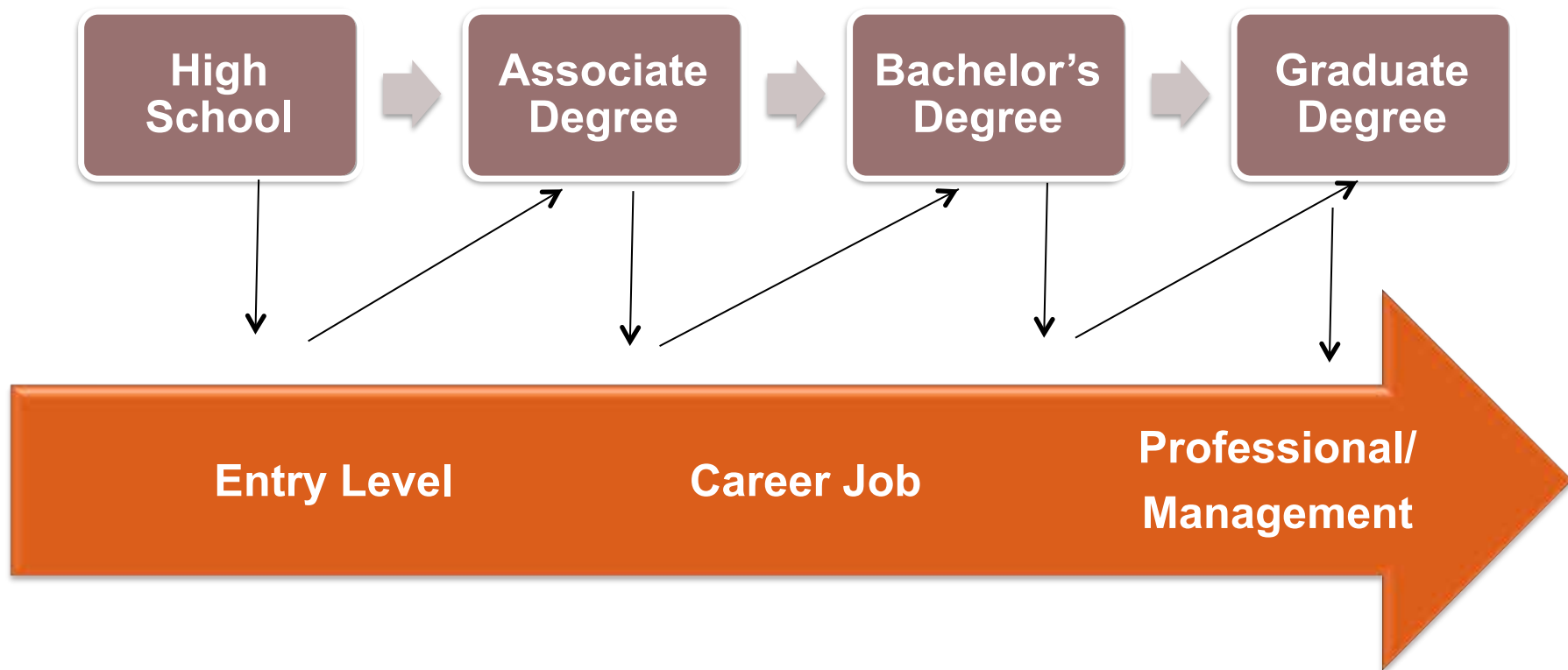
Why?





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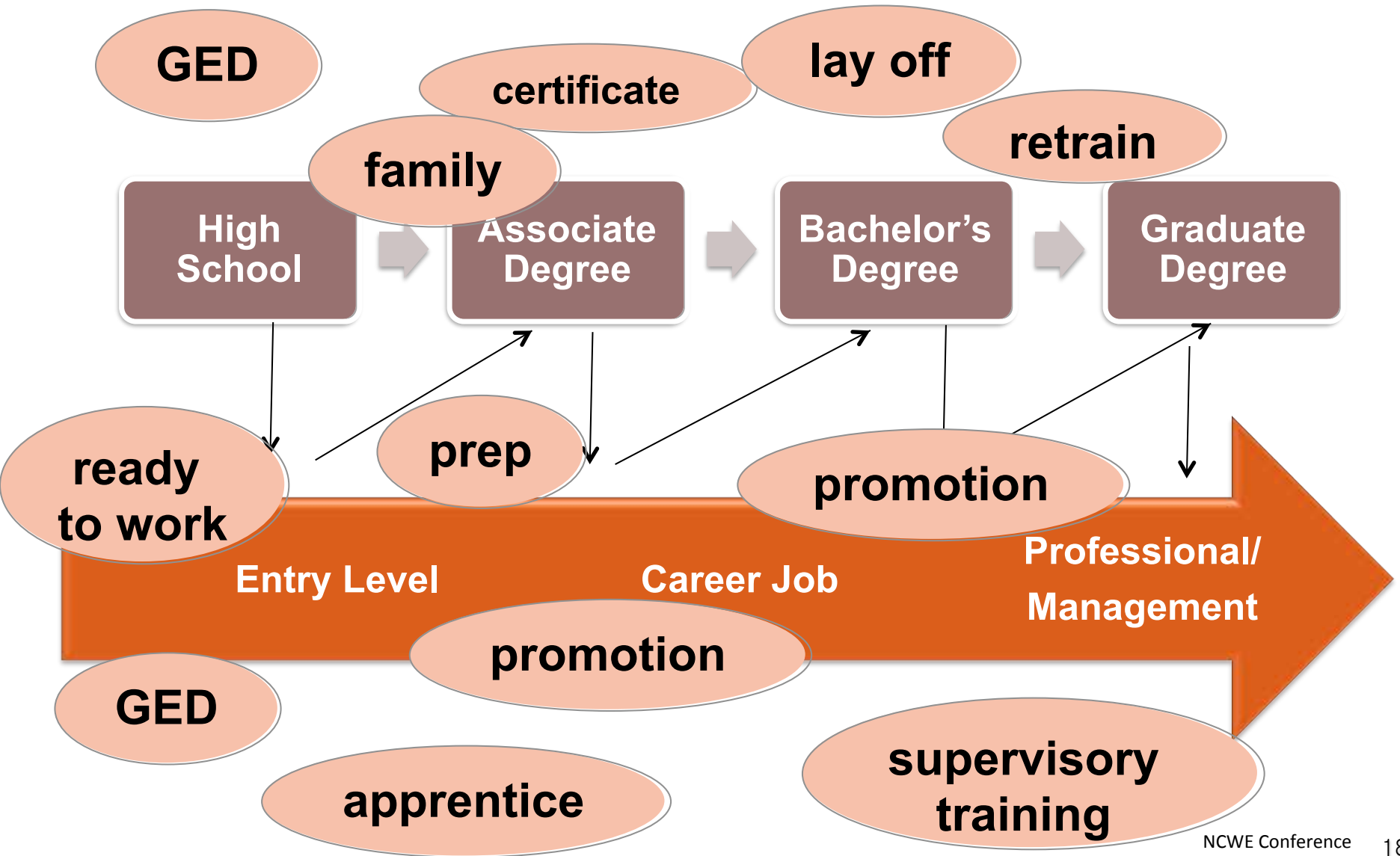
Pathways we took





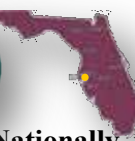
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21st Century Career Pathways



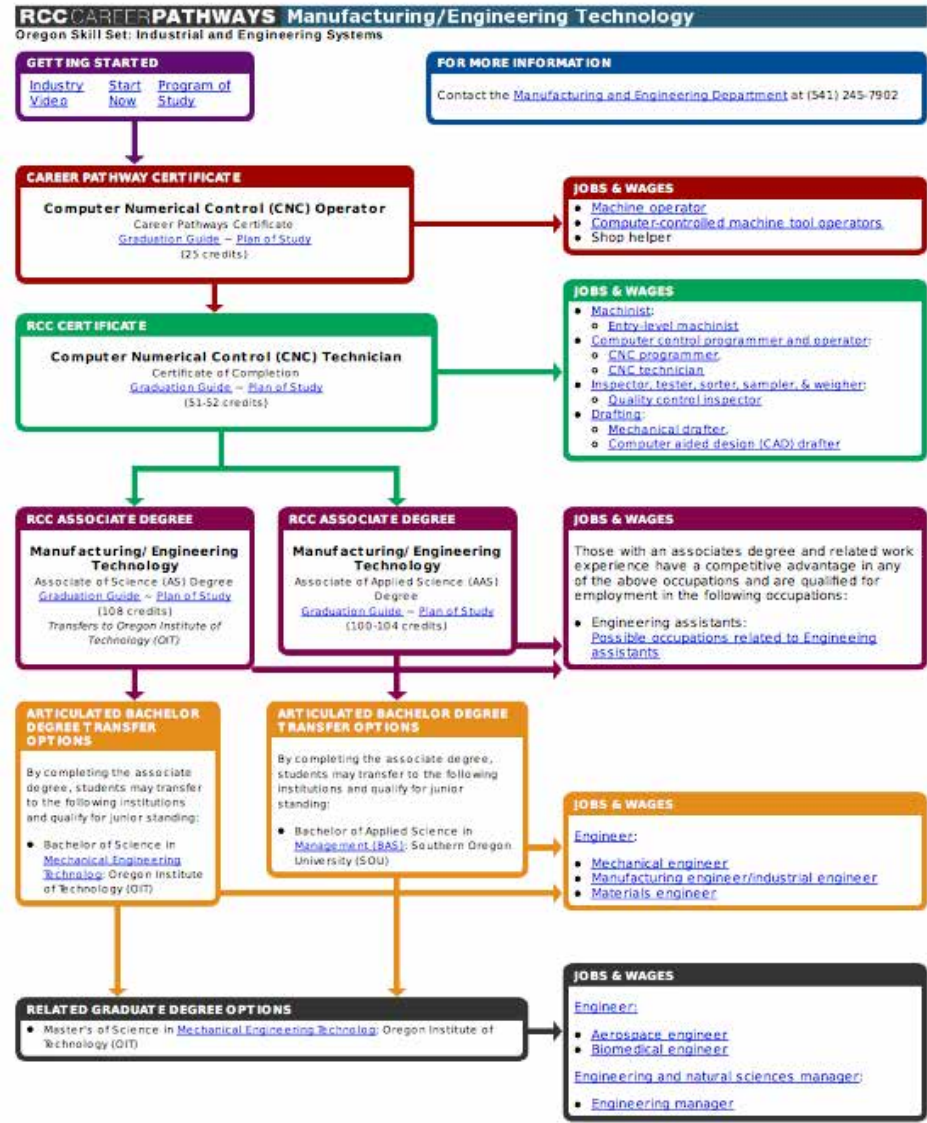
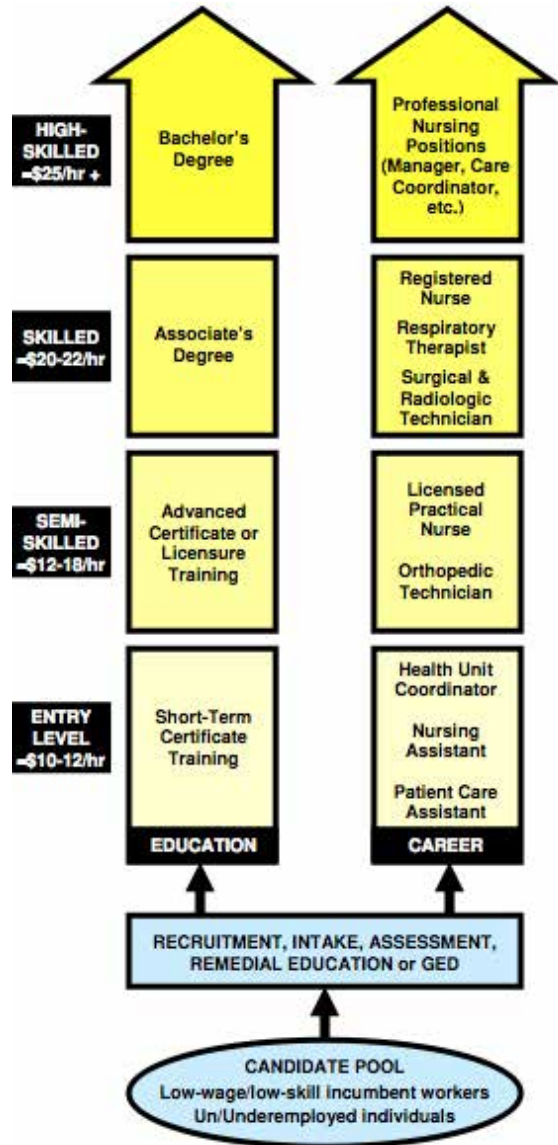
What makes a good Career Pathway?

- Offer early careers awareness/education
- Define clear & concise pathways
- Provide contextualized learning
- Have multiple, clearly marked entry & exit points
- Align & articulate with industry credentials
- Offer stackable industry & education credentials
- Have industry drivers & industry engagement
- Meet local workforce needs
- Provide wrap-around student services
- Include educator professional development
- Is a partnership with a shared vision



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Samples

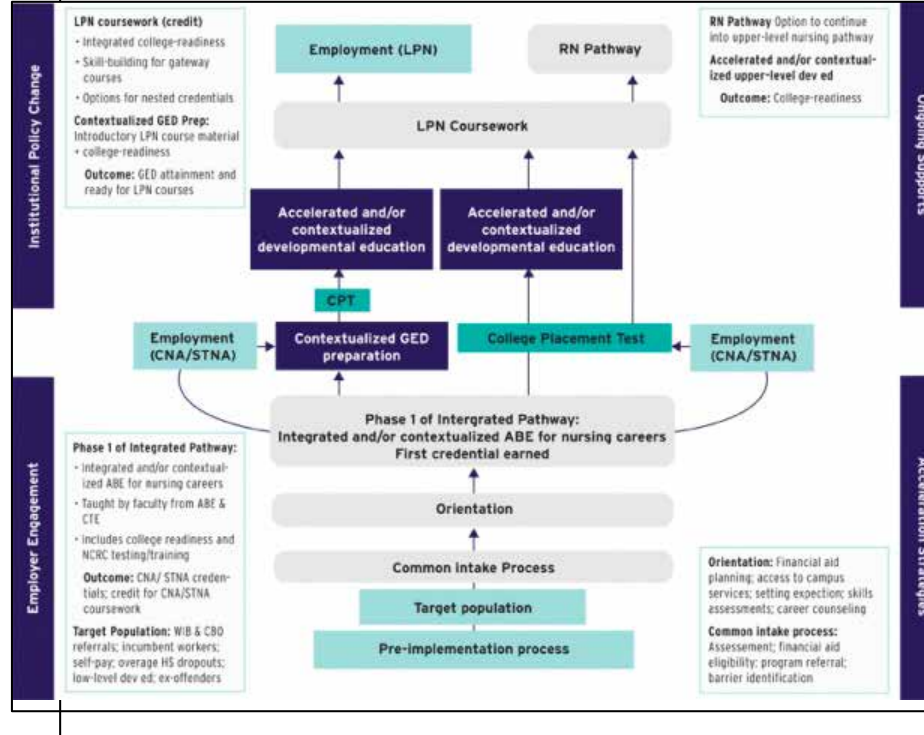




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Samples

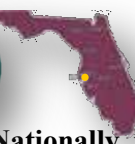
Career Pathway System



From: JFF

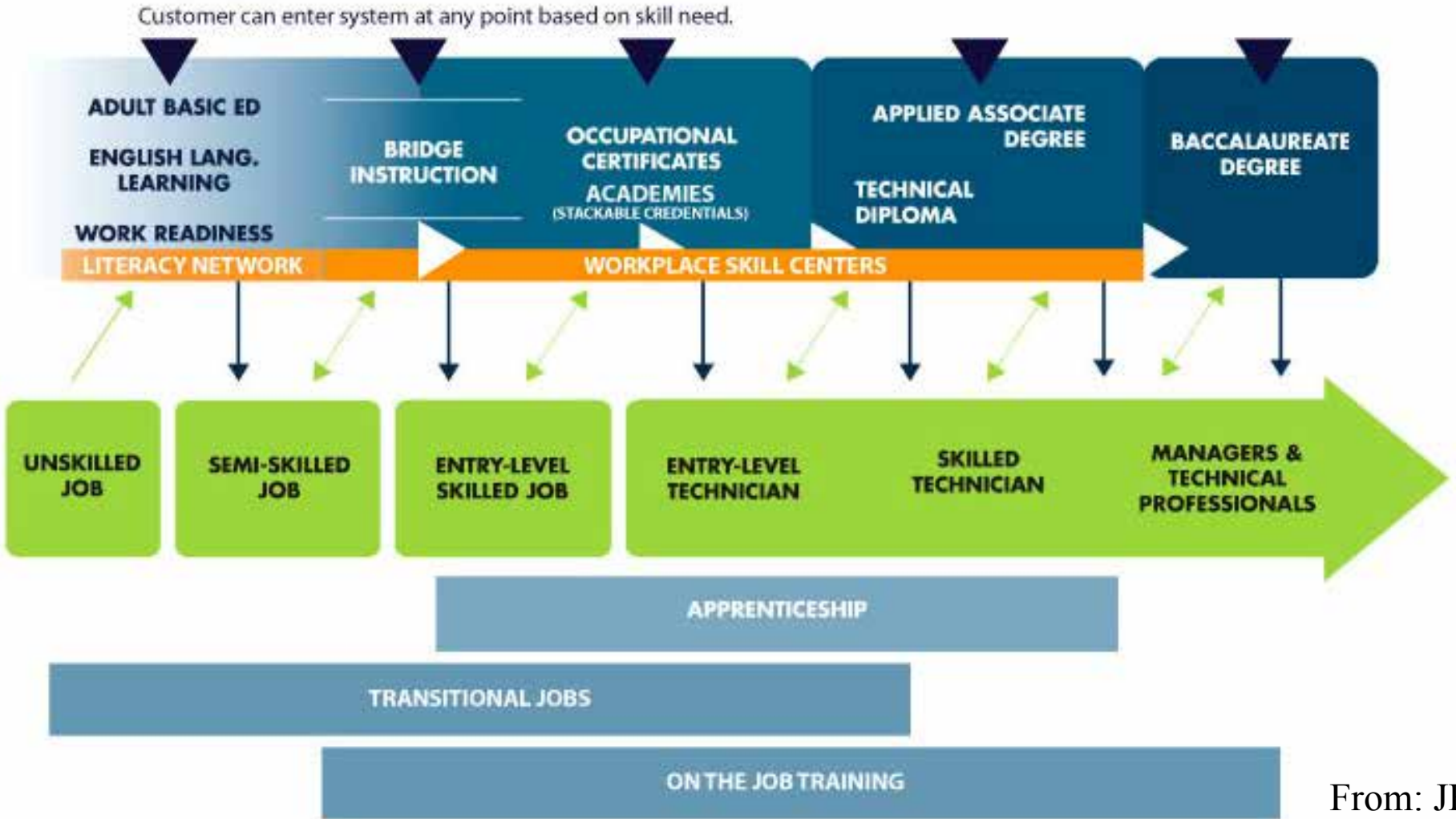
NCWE Conference

October, 2013



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Samples



From: JFF

K-16 Pathway Examples: DOE & NASDCTE

BROUGHT to YOU by
National Association of State Directors
of Career Technical Education Consortium
(NASDCTEc)



Name _____
Learner ID _____
School/College/University _____

SAMPLE

MANUFACTURING

Manufacturing

Career Cluster Plan of Study for ► Learners ► Parents ► Counselors ► Teachers/Faculty

This Career Cluster Plan of Study (based on Manufacturing Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/ or Degree Major Courses for Manufacturing	SAMPLE Occupations Relating to This Career Cluster
Interest Inventory Administered and Plan of Study Initiated for all Learners								
SECONDARY	9	English/ Language Arts I	Algebra I	Earth or Life or Physical Science	State History Civics	All plans of study should meet local and state high school graduation requirements and college entrance requirements. Certain local student organization activities are also important including public speaking, record keeping and work-based experiences.	**Introduction to Manufacturing Occupations	<ul style="list-style-type: none"> ► Assembler ► Boilermaker ► Design Engineer ► Environmental Engineer ► Foundry Worker ► Freight, Stock and Material Mover ► Health and Safety Representative ► Industrial Machinery Mechanic ► Inspector ► Labor Relations Manager ► Logistician ► Manufacturing Technician ► Pattern and Model Maker ► Production Manager ► Quality Control Technician ► Safety Engineer ► SPC Coordinator ► Tool and Die Maker ► Traffic Manager ► Welder
	10	English/ Language Arts II	Geometry	Biology	U.S. History		**Information Technology Applications	
	11	English/ Language Arts III	Algebra II	Chemistry	World History Economics		**Employment in Manufacturing Occupations	
	College Placement Assessments-Academic/Career Advisement Provided						**Applications in Manufacturing Technology	
12	English/ Language Arts IV	Trigonometry or Statistics or other math course	Physics	Psychology				
Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.								
POSTSECONDARY	Year 13	English Composition English Literature	Algebra	Chemistry Physics	American Govt. Psychology	All plans of study need to meet learners' career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include.	**Safety in the Workplace	
	Year 14	Speech/ Oral Communication	Computer Applications	Biological Science Physical Science	American History Geography		Continue courses pertinent to the pathway selected.	
	Year 15	Continue courses in the area of specialization.						
	Year 16						Complete Manufacturing Major (4-Year Degree Program)	

**See course descriptions on page 2.



K 16 Pathway Examples: DOE & NASDCTE

MANUFACTURING, MAINTENANCE & REPAIR



SAMPLE

Manufacturing: Maintenance, Installation and Repair

Career Pathway Plan of Study for ▶ Learners ▶ Parents ▶ Counselors ▶ Teachers/Faculty

This Career Pathway Plan of Study (based on the Maintenance, Installation and Repair Pathway of the Manufacturing Career Cluster) can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals. *This Plan of Study, used for learners at an educational institution, should be customized with course titles and appropriate high school graduation requirements as well as college entrance requirements.

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives Learner Activities	*Career and Technical Courses and/or Degree Major Courses for Maintenance, Installation and Repair Pathway	SAMPLE Occupations Relating to This Pathway
<i>Interest Inventory Administered and Plan of Study Initiated for all Learners</i>								
SECONDARY	9	English/ Language Arts I	Algebra I	Earth or Life or Physical Science	State History Civics	All plans of study should meet local and state high school graduation requirements and college entrance requirements. Certain local student organization activities are also important including public speaking, record keeping and work-based experiences.	• Introduction to Manufacturing Occupations	▶ Biomedical Equipment Technician ▶ Boilermaker ▶ Communication System Installer/Repairer ▶ Computer Installer/Repairer ▶ Computer Maintenance Technician ▶ Electrical Equipment Installer/Repairer ▶ Facility Electrician ▶ Industrial Electronic Installer/Repairer/Manager ▶ Industrial Machinery Mechanic ▶ Industrial Maintenance Electrician ▶ Industrial Maintenance Technician/Mechanic
	10	English/ Language Arts II	Geometry	Biology	U.S. History		• Information Technology Applications	
	11	English/ Language Arts III	Algebra II	Chemistry	World History Economics		• Employment in Manufacturing Occupations	
	<i>College Placement Assessments-Academic/Career Advisement Provided</i>							
	12	English/ Language Arts IV	Trigonometry or Statistics or other math course	Physics	Psychology	• Applications in Manufacturing Technology	▶ Industrial Electronic Installer/Repairer/Manager ▶ Industrial Machinery Mechanic ▶ Industrial Maintenance Electrician ▶ Industrial Maintenance Technician/Mechanic	
<i>Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.</i>								
POSTSECONDARY	Year 13	English Composition English Literature	Algebra	Chemistry Physics	American Government Psychology	All plans of study need to meet learners' career goals with regard to required degrees, licenses, certifications or journey worker status. Certain local student organization activities may also be important to include.	• Safety in the Workplace • Workplace Communication	▶ Instrument Calibration and Repairer ▶ Instrument Control Technician ▶ Job/Fixture Designer ▶ Laser Systems Technician ▶ Maintenance Repairer ▶ Major Appliance Repairer ▶ Meter Installer/Repairer ▶ Plumber, Pipe Fitter and Steam Fitter ▶ Security System Installer
	Year 14	Speech/ Oral Communication	Computer Applications	Biological Science Physical Science	American History Geography		• Predictive and Preventive Maintenance • Manufacturing Equipment	
	Year 15	Continue courses in the area of specialization.					• Continue Courses in the Area of Specialization	
	Year 16						• Complete Manufacturing Major (4-Year Degree Program)	



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Pathway Examples: NAM



ALIGNING STEM EDUCATION, CERTIFICATION AND CAREER PATHWAYS For Florida via Engineering Technology A.S. Degree

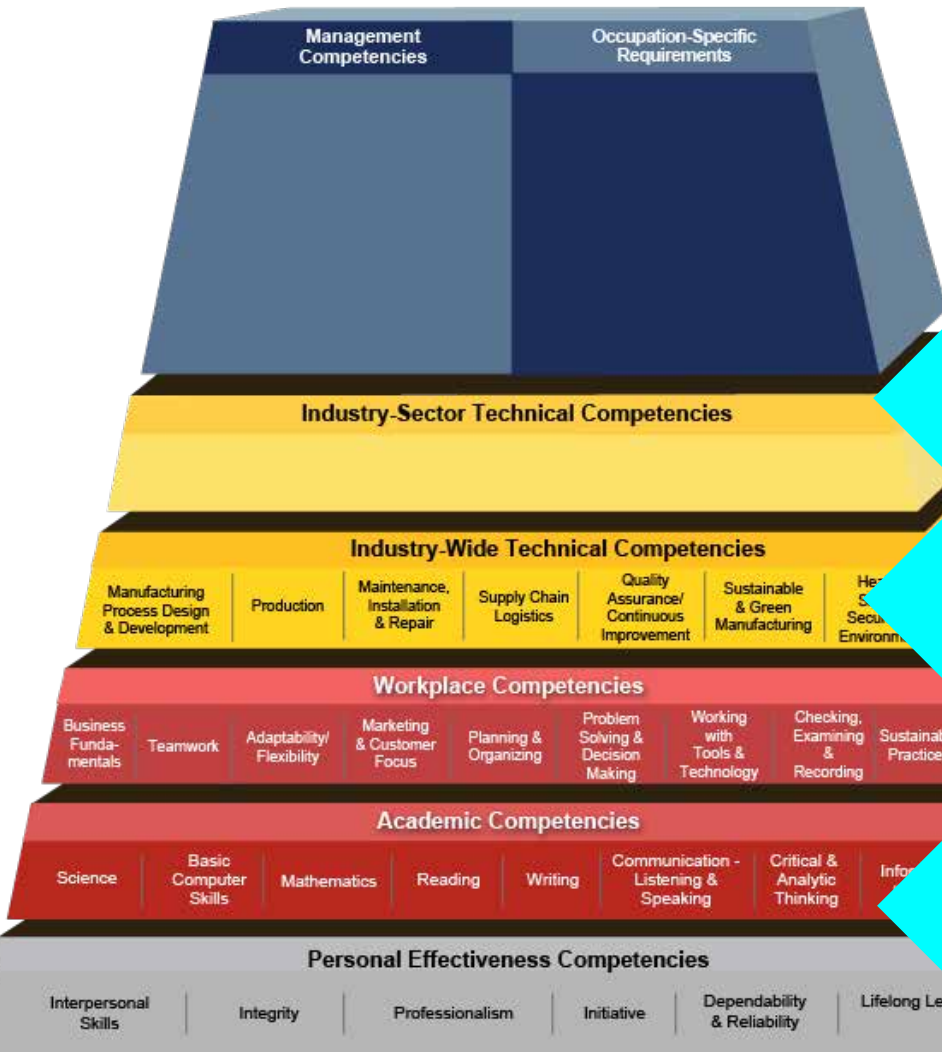
EDUCATION PATHWAY	CERTIFICATION PATHWAY	CAREER PATHWAY
MASTERS OR PHD		
BACHELORS OF SCIENCE / ENGINEERING TECHNOLOGY (various disciplines) <ul style="list-style-type: none"> Florida State Colleges; FA&MU; BACHELOR OF APPLIED SCIENCE / TECHNOLOGY MANAGEMENT/ _____ <ul style="list-style-type: none"> Florida State Colleges; USF Polytechnic Day/evening/hybrid BACHELOR OF SCIENCE / ENGINEERING DISCIPLINES <ul style="list-style-type: none"> USF, UF, UCF, FSU, FAU, FIU, UWF, UNF, private Day/evening/hybrid 	<ul style="list-style-type: none"> ISA Certified Automation Professional SME Manufacturing Engineer SME Manufacturing Technologist 	<ul style="list-style-type: none"> Mechatronics Engineer (17-2199.05) Manufacturing Engineer (17-2199.04) Mfg Technologist (17-3029.06) Plant Engineer \$51k - \$79k
ASSOCIATE IN (APPLIED) SCIENCE – ENGINEERING TECHNOLOGY <ul style="list-style-type: none"> 60 Credit Hours/ Two Years Full Time Day /evening/online/hybrid ASSOCIATE OF ARTS/ ENGINEERING <ul style="list-style-type: none"> 60 Credit Hours/ Two Years Full Time Day/evening/hybrid 	<ul style="list-style-type: none"> College technical certificates ISA Certified Control Systems Technician NIMS Level 1, Measurements, Materials, and Safety Fluid Power certificates 	<ul style="list-style-type: none"> Robotics Technician (17-3024.01) Manufacturing Technician (17-3029-09) Electrical Technician (17-3023) Mechanical Engineering Technicians (17-3027) Industrial Engineering Technicians (17-3026) Computer control programmer (51-4012) \$23k - \$39K
COLLEGE CREDIT CERTIFICATE PROGRAM <ul style="list-style-type: none"> Minimum of 12 Credit Hours/ Less than 1 Full Year (future alignment to appropriate credentials) 	<ul style="list-style-type: none"> Engineering Technology Support Certificate MSSC: Maintenance Awareness; Safety; Quality; Manufacturing Processes and Materials; Certified Production Technician (CPT) NIMS Level 1, Measurements, Materials, & Safety 	<ul style="list-style-type: none"> Electro-Mechanical Technician (17-3024) CNC Operators (51-4011) Automation Maintenance Technician \$17k - \$27K
HIGH SCHOOL CAREER PROGRAM Machine Operator/ Maintenance <ul style="list-style-type: none"> Less than One Year Full Time 	<ul style="list-style-type: none"> MSSC CPT (Maintenance Awareness; Safety; Quality; Manufacturing Processes and Materials; Florida Ready to Work Certificate 	<ul style="list-style-type: none"> Operator Production Worker (51-9199) \$17K - \$27K
Florida Ready to Work (ACT Career Readiness) Personal Effectiveness * Academic Competencies Workplace Competencies		
Applied STEM (High School) Dual Enrollment - Career Academy – Youth Development Programs	Out of School/Low Skill Youth/Adults WIA/Career Centers – ESL/VESL - GED/ABE “Bridge” and Foundation Programs	Skilled Adults Retraining/Lay Offs – Continuing Education Company Specific Apprenticeship

(Credit hours are based on semester courses)



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National Perspective



ASQ, SME, FMA, ISA, etc

MSSC, NIMS, AWS

NCRC

High Quality Middle Class Jobs

Occupation-Specific Certifications

Entry Level Industry Certifications

Ready for Work, Ready for College

Career Paths – Life Long Learning



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Florida's A.S. Engineering Technology Degree

60 semester hours

I. General Education – 15 - 18 credit hours

II. ET Core - 18 credit hours

III.8 Specialization Tracts – 24 to 27 credit hours



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Florida's A.S. Engineering Technology Degree

60 semester hours

I. General Education – 15 - 18 credit hours

- English
- Math
- Humanities
- Science
- Social Science

II. ET Core - 18 credit hours

- Computer Aided Design
- Manufacturing Processes & Materials
- Mechanics & Instrumentation
- Electronics
- Quality
- Safety



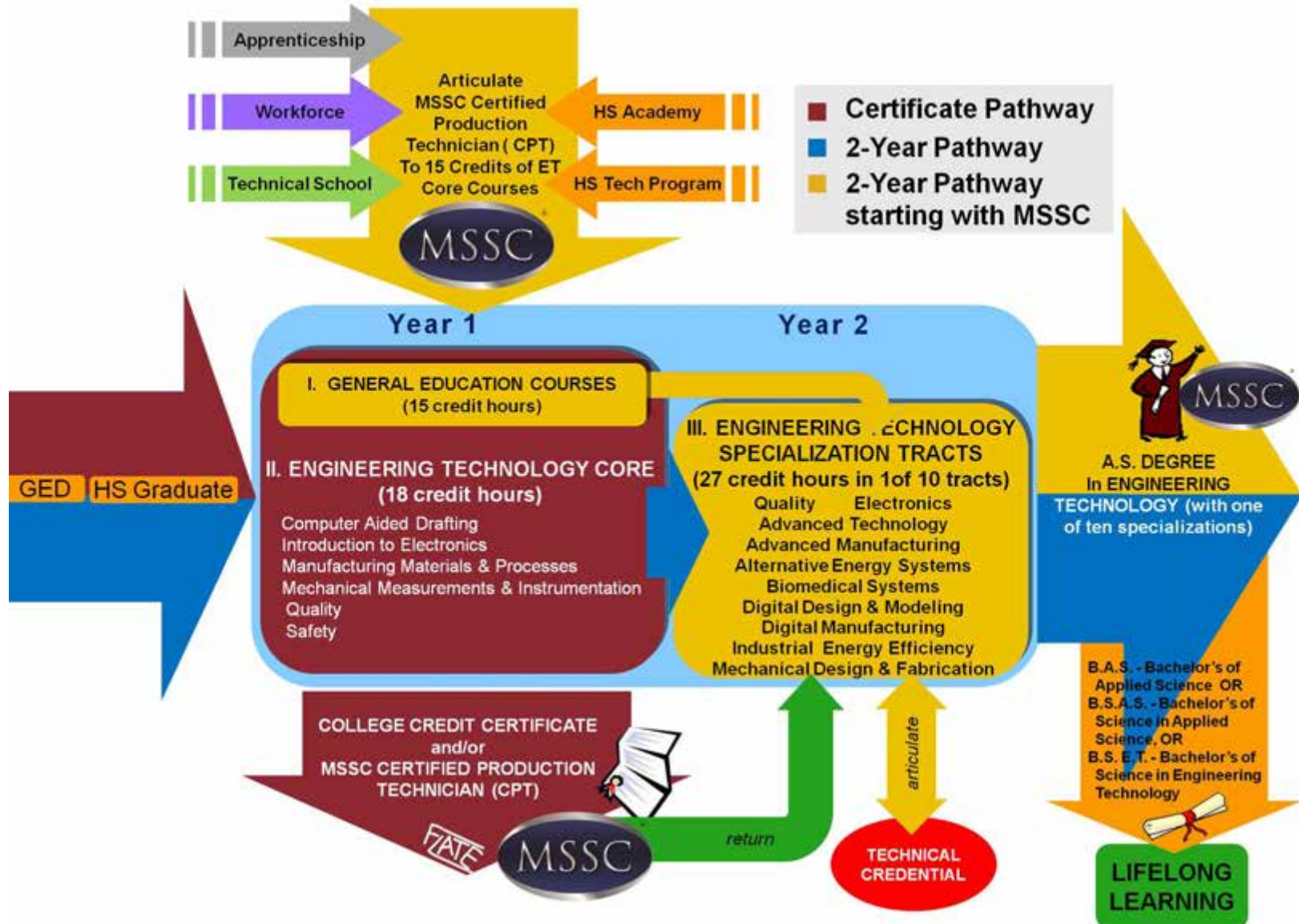
III. 10 Specialization Tracts – 24 to 27 credit hours

- Advanced Manufacturing
- Biomedical Systems
- Electronics
- Quality
- Digital Manufacturing
- Advanced Technology
- Digital Design & Modeling
- Mechanical Design & Fabrication
- Alternative Energy Systems
- Industrial Energy Efficiency



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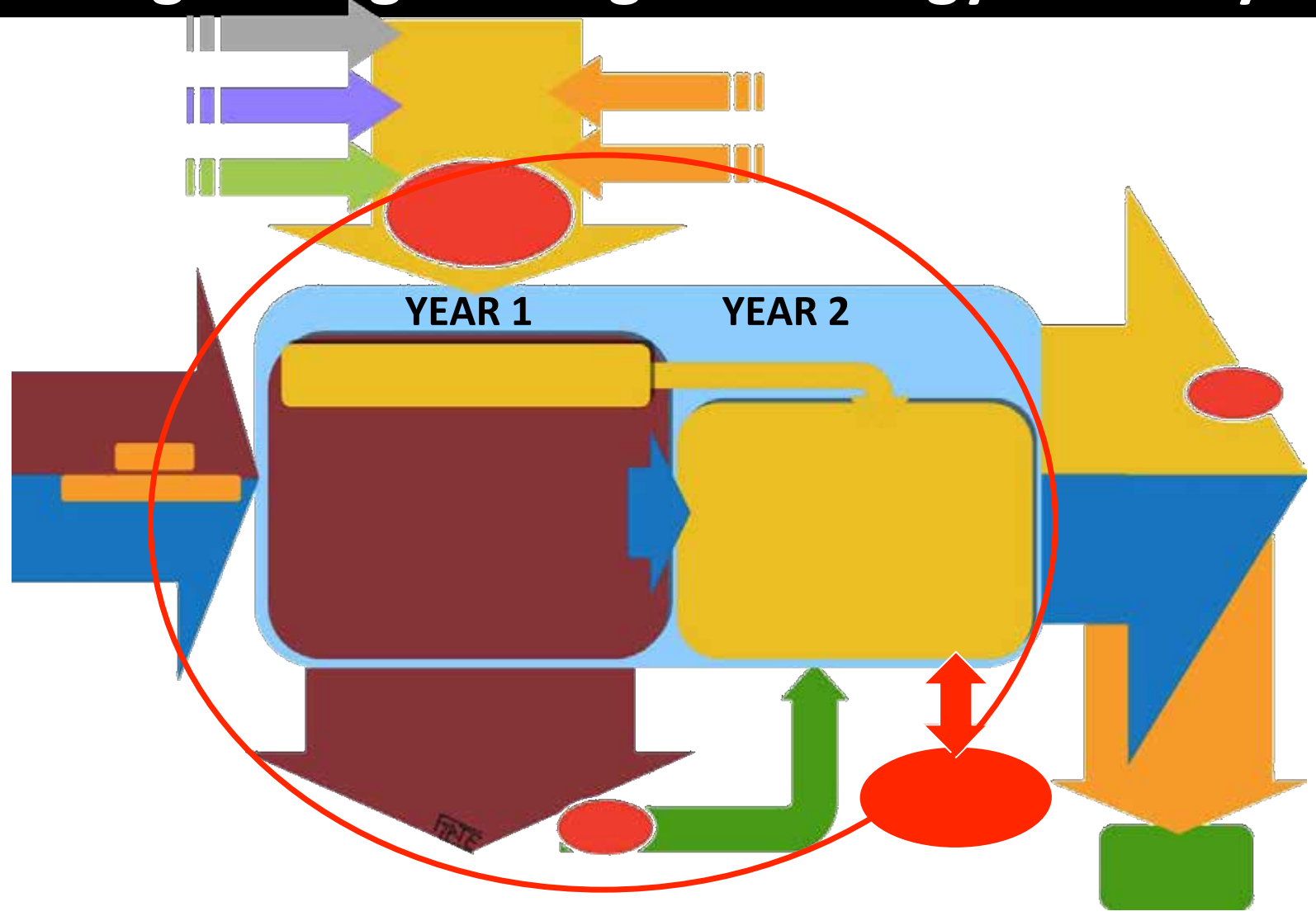
A.S. Engineering Technology Pathways





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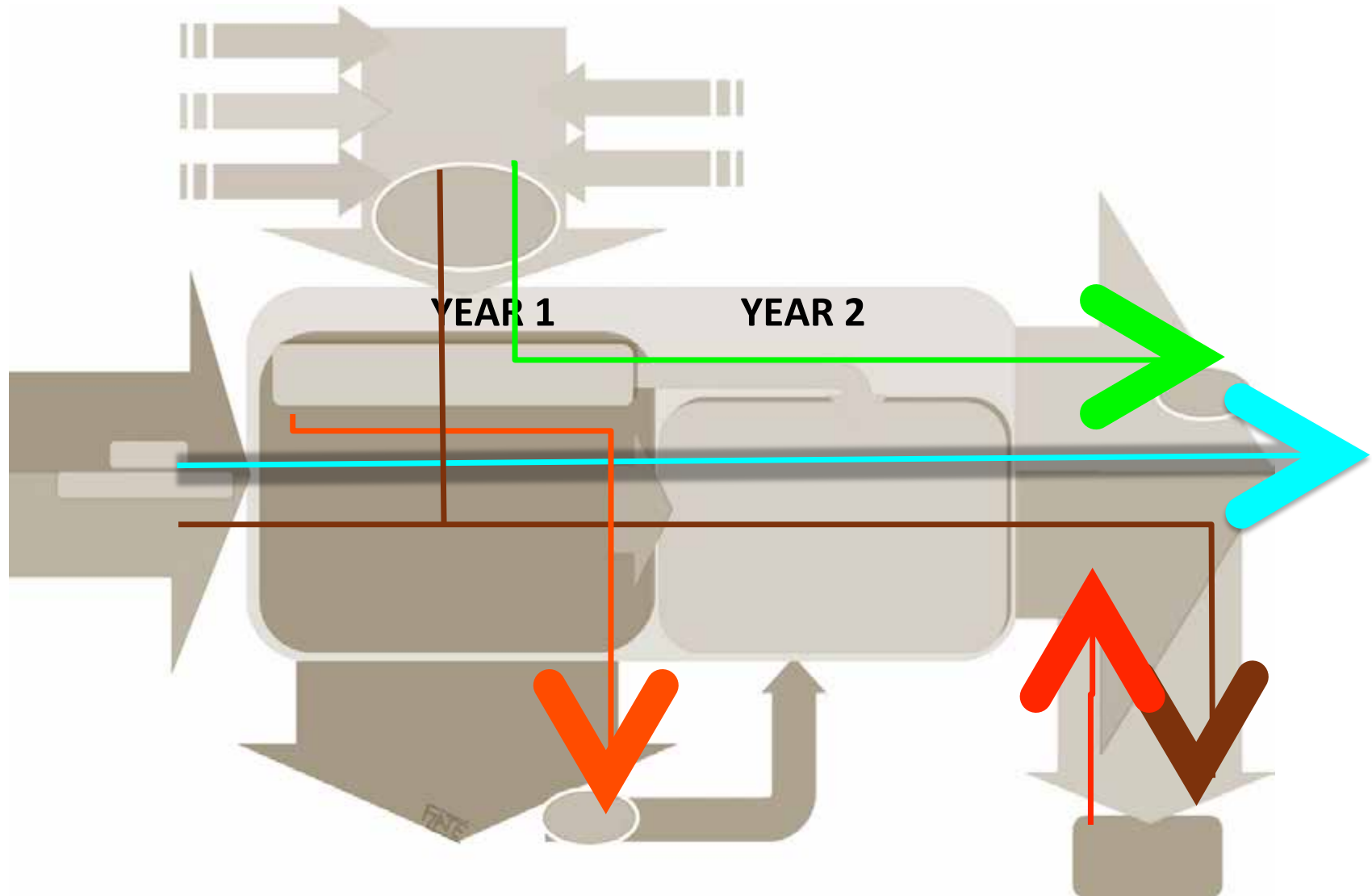
A.S. Degree Engineering Technology Pathways





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A.S. Engineering Technology Pathways

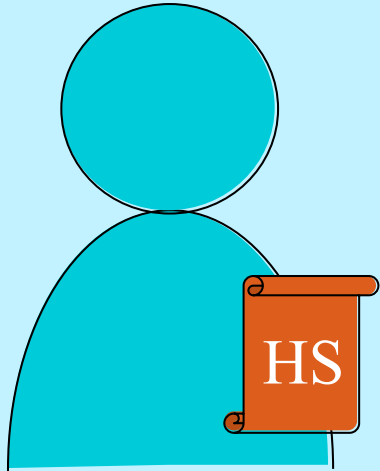




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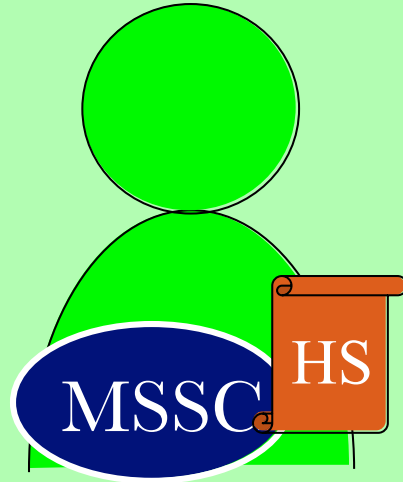
A.S. Engineering Technology Pathways

HS Grad / GED with no Technical Program - *wants AS/AAS Degree*



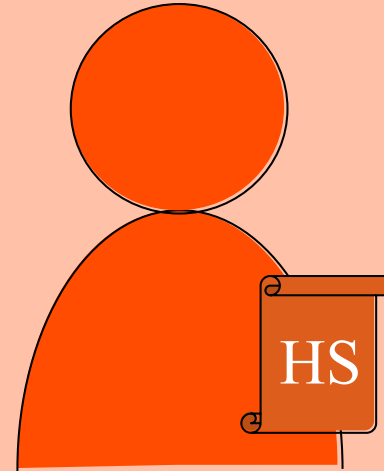
AS Degree (and optional certificates)

HS Grad / GED with MSSC Certification (from HS or work experience)



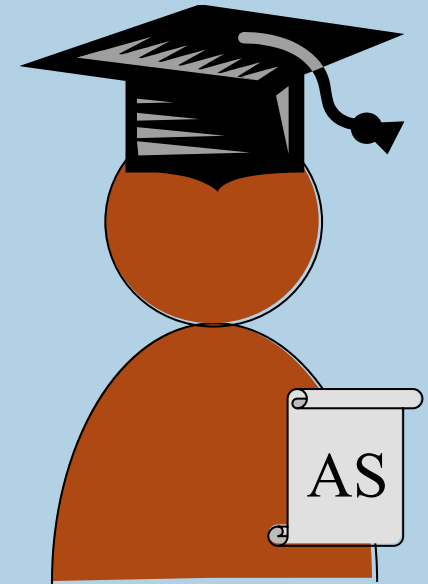
AS Degree & MSSC CPT (and optional certificates)

HS Grad / GED without Technical Program



College Certificate & MSSC CPT

AS ET Graduate



BS Applied Science or BS Eng Tech



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ET Degree Technical Core



Quality
 Safety
 Electronics
 Manufacturing Materials & Processes
 Mechanical Measurements & Instrumentation
 Computer Aided Drafting



Engineering Technology
 Support Certificate (18 Cr)
*Prepared to take MSSC
 Certification Exams)*





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ET Degree Technical Core



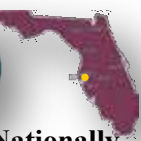
Quality
 Safety
 Electronics
 Manufacturing Materials & Processes
 Mechanical Measurements & Instrumentation
 Computer Aided Drafting



Engineering Technology
 Support Certificate (18 Cr)
 Prepared to take MSSC
 Certification Exams

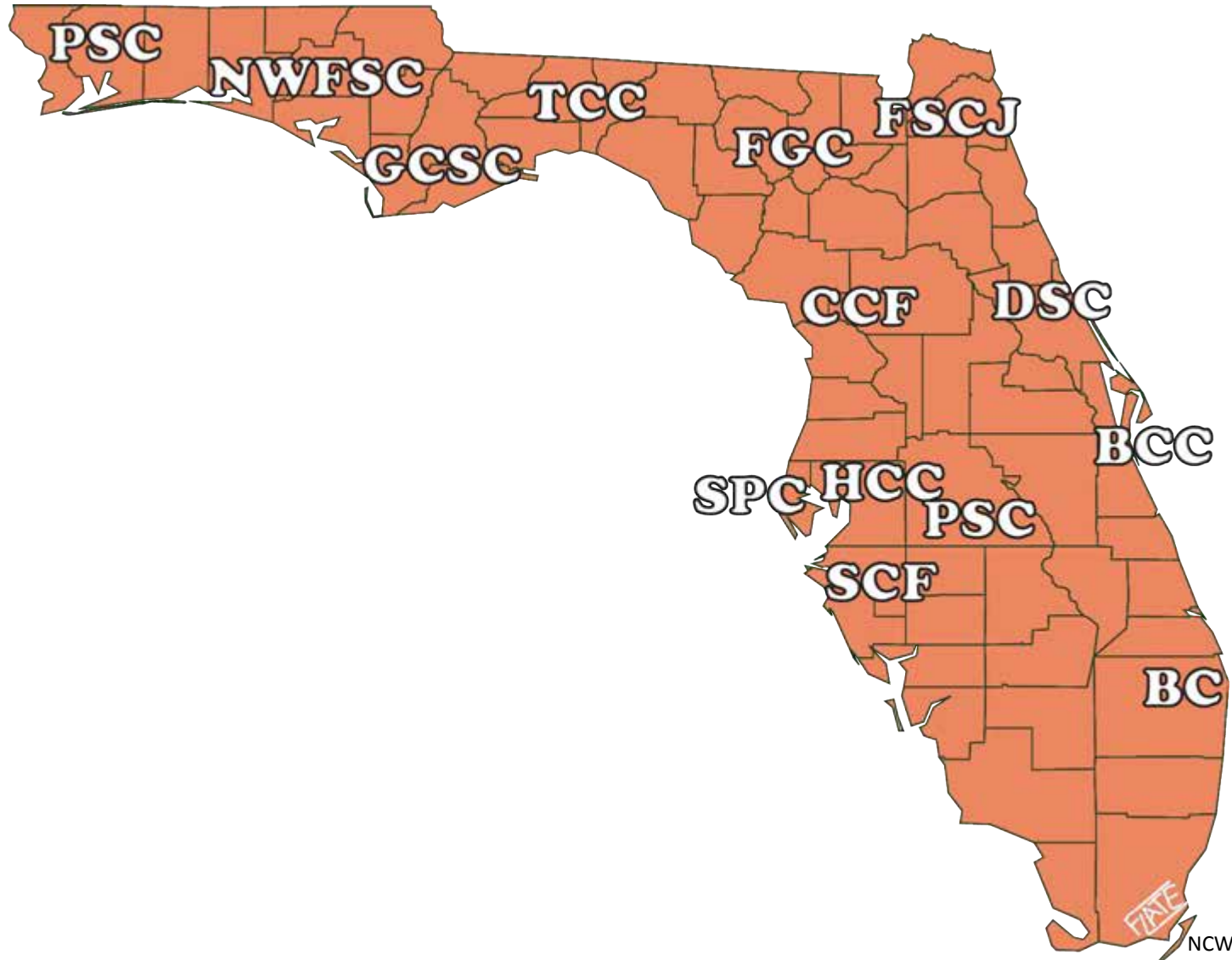


Academic Credential



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FLATE's Engineering Technology Network





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FLATE's Engineering Technology Network

SPECIALIZATION	COLLEGES & LOCATIONS
Quality	College of Central Florida (CF) - Ocala Florida Gateway College (FGC) - Lake City St. Petersburg College (SPC) - Clearwater Tallahassee CC (TCC) - Tallahassee
Electronics	Eastern Florida SC (EFSC) - Cocoa, Palm Bay Broward College (BC) - Coconut Creek State College of Florida (SCF) - Venice St. Petersburg College (SPC) - St. Pete
Advanced Manufacturing	Florida Gateway College (FGC) - Lake City Florida State College (FSCJ) - Jacksonville Gulf Coast SC (GCSC) - Panama City Hillsborough CC (HCC) - Tampa Polk State College (PSC) - Lakeland Tallahassee CC (TCC) - Tallahassee
Mechanical Fabrication & Design	Gulf Coast SC (GCSC) - Panama City Florida State College (FSCJ) - Jacksonville Northwest Florida SC (NWFSC) - Niceville Tallahassee CC (TCC) - Tallahassee

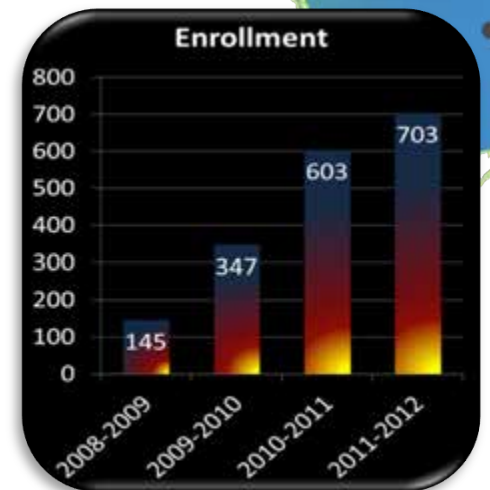
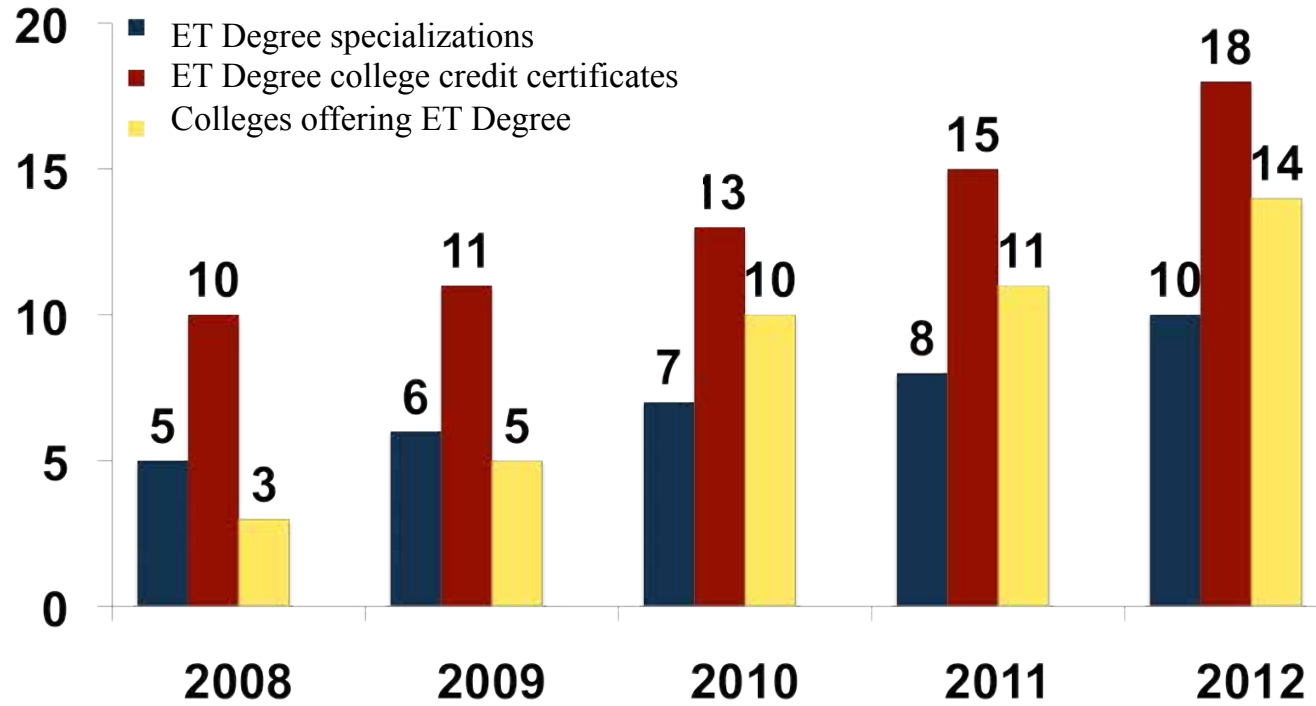
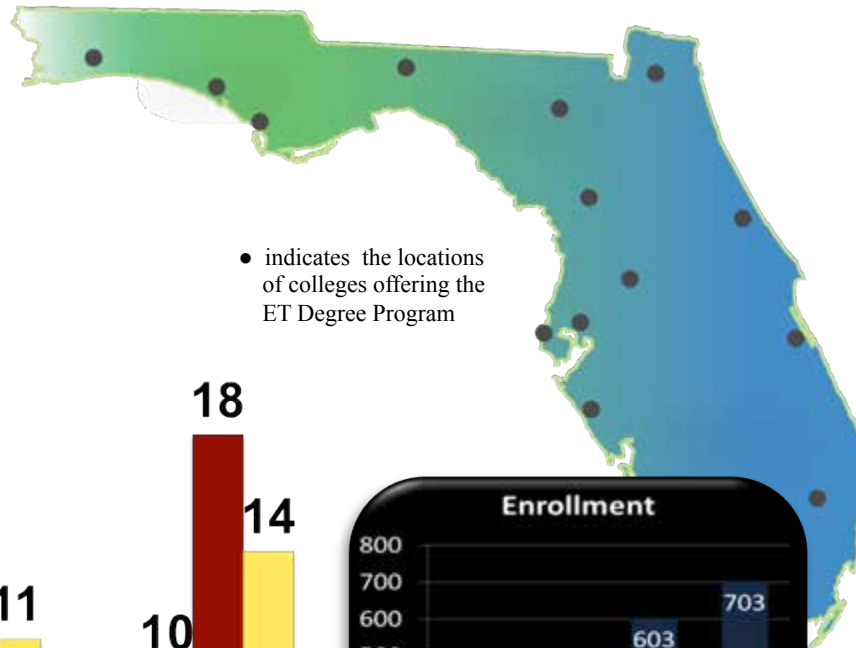
SPECIALIZATION	COLLEGES & LOCATIONS
Advanced Technology	Eastern Florida SC (EFSC) - Cocoa, Palm Bay Tallahassee CC (TCC) - Tallahassee
Biomedical Systems	Broward College (BC) - Coconut Creek St. Petersburg College (SPC) - Clearwater
Digital Design & Modeling	College of Central Florida (CF) - Ocala Gulf Coast SC (GCSC) - Panama City Northwest Florida SC (NWFSC) - Niceville State College of Florida (SCF) - Venice St. Petersburg College (SPC) - St. Pete Tallahassee CC (TCC) - Tallahassee
Alternative Energy Systems	Eastern Florida SC (EFSC) - Cocoa, Palm Bay Broward College (BC) - Coconut Creek Gulf Coast SC (GCSC) - Panama City Tallahassee CC (TCC) - Tallahassee
Industrial Energy Efficiency	Florida State College (FSCJ) - Jacksonville
Digital Manufacturing	Gulf Coast SC (GCSC) - Panama City



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Engineering Technology A.S. Degree

Key Milestones 2008 - 2013





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FLATE's Engineering Technology Network

Search Site |

Industry | Careers | Students

Why Manufacturing | E.T. Degree | Student Profiles | Salary Information | Company Profiles | News & Events

Engineering Technology Education

At a Community College near you!

Good jobs, great pay, bright future



The Engineering Technology (ET) degree program was developed by the Florida Advanced Technology Education (FLATE) with Community and Industries across the state and in close partnership with the Department of Education to address the growing need to supply manufacturers and high technology industries with qualified, highly skilled workers in the foreseeable future.

The new ET degree program is a cohesive, comprehensive degree program that focuses on a set of core classes that cover introductory drafting, electronics, instrumentation and testing, processes and quality and safety. These core skills align with the national Manufacturing Skill Standards Council (MSSC) Portable Production Technician Certification. The ET Core coupled with a second year degree specialization prepares students for many jobs in manufacturing and many other high-technology industries.

A valid MSSC CPT credential articulates to 15 credit hours of the ET Technical Core in any of colleges offering the degree in the state. The MSSC CPT is also one component of the National Association of Manufacturers (NAM) endorsed Stackable Certification System (SCS). This SCS system aligns industry validated credentials with academic programs and occupations supporting all manufacturing sectors.

[View school location map](#)

Community colleges currently offering the ET degree include:

Click on the logos below to view program information







Engineering Tech @ St. Petersburg College (60 credits)

The Engineering Technology Associate in Science degree is a 60 credit hour program. The degree program consists of general education (18cr), ET core (18cr) and specialized technology (24cr) courses. This degree program consists of four specializations: Digital Design and Modeling, Biomedical Systems, Electronics and Quality.

ENGINEERING TECHNOLOGY Core Courses

CAD	Electronics
Measurement & Instrumentation	Quality
Manufacturing Processes	Safety

SPECIALIZATIONS Available

- DIGITAL DESIGN AND MODELING
- BIOMEDICAL SYSTEMS
- ELECTRONICS
- QUALITY



PROGRAM DESCRIPTION:
This program prepares students for an entry-level position in a wide range of manufacturing organizations. Students learn the fundamental operations for all types of manufacturing. This program also provides supplemental training for individuals presently or currently employed in the manufacturing industry. After completing the first year, students can take the Manufacturing Skills Standards Council (MSSC) test. The two options available in this degree allow the student to seek employment in several different positions in the high-tech manufacturing industry. All A.S. degree - seeking students must satisfy entry-level assessment requirements and complete all required college-preparatory courses in reading, writing, and mathematics with a grade of "C" or better.

ASSOCIATE IN APPLIED SCIENCE DEGREE

GENERAL EDUCATION AND ENGINEERING TECHNOLOGY CORE COURSES

GENERAL EDUCATION (18 credits)	Cr.	ENGINEERING TECHNOLOGY CORE (18 credits)	Cr.
Written Communication Requirement	3	ETEC 1100 AutoCAD Fundamentals	4
Oral Communication Requirement	3	ETEC 1089 Introduction to Electronics	3
Humanities Requirement	3	ETEC 1030 Materials and Processes	3
Math Requirement	3	ETEC 1081 Applied Mechanics	4
Social/Behavioral Science Requirement	3	ETEC 1118 Introduction to Quality Assurance	3
Technical Elective/Non-Computer Applications	3	ETEC 1781 Industrial Safety	3

SPECIALIZED TRACK COURSES

ELECTRONICS TECHNOLOGY (12 credits)	Cr.	ADVANCED TECHNOLOGY (12 credits)	Cr.
ETEC 1025 Circuit Fundamentals I	4	ETEC 1030 Introduction to the Workplace of general digital	4
ETEC 1241 Analog Devices	4	ETEC 1029 Introduction to PCB and Surface Mount Technology	3
ETEC 1242 Analog Circuits	4	ETEC 1029 Advanced Surface Mount Soldering Tech	3
ETEC 1214 Digital Fundamentals	4	ETEC 1028 Introduction to Robotics	3
Technical Elective/Non-Computer Applications	3	ETEC 1242 PCB Design Technology	3
		ETEC 1212 Non-Destructive and Destructive Testing	3
		ETEC 1049 Composite Fundamentals	3

TECHNICAL ELECTIVE COURSES

ETEC 1210 Measurement Fundamentals	3	ETEC 1240 Fiber Optic Technology	3
ETEC 1310 Digital Fundamentals II	3	ETEC 1311 Special Topics	0-4
ETEC 1018 Through-hole and Surface Mount Soldering	3	ETEC 2041 Internship	3
ETEC 1212 Electronics System Systems	3	ETEC 2049 Composite Fundamentals	3
ETEC 2034 Schematic Capture & Modeling	3	ETEC 303X Advanced Computer	3
ETEC 2036 Engineering Project Report	3		

High-Wage High-Skill Careers MADE IN FLORIDA



ENGINEERING TECHNOLOGY EDUCATION Certificates and Degrees

Supporting Florida's High Tech Industry Sectors

- Aviation & Aerospace
- Advanced Manufacturing
- Advanced Materials
- Energy & Systems Integration
- Food, Beverages & Pharmaceuticals
- Insurance & Entertainment Systems
- Medical Devices & Equipment
- Metal Machining & Fabrication
- Product & Process Design
- Transportation & Logistic Products



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in manufacturing or other high
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FLORIDA ADVANCED TECHNOLOGICAL EDUCATION CENTER

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EXPLORE CAREERS IN MANUFACTURING

ENGINEERING TECHNOLOGY EDUCATION

Insert name of college here, include branch campus, if any

Manufacturing is a stable and exciting career option for students who are interested, enjoy using their creativity, get excited about using new technology or an interest in learning how things work.

Want to introduce your students to the world of engineering technology?

FLATE (Florida Center for Manufacturing Education) and its local academic partners offer a variety of options to introduce students to the world of high-tech manufacturing, including:

- **Student Industry Tours** - Over 1,000 students and 150 teachers have participated in the Made in Florida Tours of manufacturing facilities. Contact David Gals, Outreach Manager at 813-219-4381 or pdg@fl-ate.org, to schedule a tour for your students.
- **Classroom Speakers** - Don't have the time or resources to send a visit? Contact David Gals, Outreach Manager at 813-219-4381 or pdg@fl-ate.org, to schedule a visit to your classroom by a manufacturing expert.
- **Made in Florida Learning Challenges** - Middle and High School classroom learning activities based on Florida Manufacturing. Visit www.madeinflorida.org/education.html
- **On the Web**
 - **Made in Florida Virtual Tours** - Visit www.madeinflorida.org/virtual_tours.html.
 - **Made in Florida Video on Florida Manufacturing** - Visit www.madeinflorida.org/video.html.
 - **The National Association of Manufacturers, Oceanic - Do it campaigns** - They release an printed every Sunday. Visit www.oceanic.com, go to the Forum tab and click on Cool Videos of Stuff Being Made.
 - **Manufacturing is Cool** - This web site is interactive and includes virtual tours and other tools to inspire young minds. Visit www.manufacturingiscool.com.



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JOBS IN FLORIDA

ENGINEERING TECHNOLOGY EDUCATION

Insert name of college here, include branch campus, if any.

MANUFACTURING IS BIG BUSINESS, and it's getting bigger. Florida's manufacturing industry employs about 400,000 workers and accounts for more than \$32 billion of its gross state product.

Florida manufacturers are looking for highly-skilled, technically educated people and the new Engineering Technology degree program promises to keep Florida's manufacturers supplied with highly skilled workers, while providing its graduates with rewarding, high-wage jobs.

The Bureau of Labor Statistics predicts that each year through 2012 employers will be seeking:

- 17,000 industrial and manufacturing engineers
- 14,000 mechanical engineers
- 14,000 engineering technicians
- 273,000 metal and plastic production workers

Average hourly wage with a two-year degree:

- Electrical and Electronic Engineering Technicians \$20.53
- Industrial Engineering Technicians 15.63
- Mechanical Engineering Technicians 15.32
- Electrical and Electronic Drafter 18.96
- Electronic, Computer and Product Service Rep 15.19

Average hourly wage with a four-year degree*:

- Manufacturing Engineer \$36.27
- Systems Designer 35.39
- Electronic Designer 35.21
- Industrial Engineer 29.81

* 2 year A.S. degree are a stepping stone to a 4 year Bachelor of Applied Science degree in the State of Florida and equivalent to BS/ET degree in UKP.

Average Annual Manufacturing Wages 2005 \$43,483

Average Annual State Wages 2005 \$36,096



JOBS IN FLORIDA

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Impact Florida. Lead Nationally.

Thank you!

Marilyn Barger, Ph.D., P.E., CPT
Executive Director and P.I.
barger@fl-ate.org



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