RUTGERS
School of Management and Labor Relations
EDUCATION AND EMPLOYMENT RESEARCH CENTER

Defining Workforce Education's Impact on Economic Development and Innovation

The Hidden Innovation Infrastructure (HII):
The Role of Economic Development in Technician Education in the Changing Future of Work (NSF ATE: 2026262)

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Outline

- HII Project Overview
  - Goals, Objectives, Key Activities
  - Research Plan, Methods
  - Conceptual Model
  - Grantee Review Findings
  - Case Study Colleges
- Case Study Overview: Daytona State College
- Discussion and Questions

Study Goals & Objectives

- Uncover how ATE's development of the technician workforce through innovation in community college technician education programs contributes to economic development.

- Develop a better conception of how community college technician education contributes to economic development in terms of skill development and support of the innovation ecosystem.

- Develop measures of how technician skill development contributes to firm-level innovation and productivity and regional economic development.

Key Project Activities

- *National Analysis of ATE and Community College Technician Education*
  - Review of Past and Current ATE Grants
  - Quantitative analysis of trends and impacts

- *Regional Case Studies of Community College Technician Education in Manufacturing in Regions and Firms*
  - In-depth Interviews
  - Employer Surveys

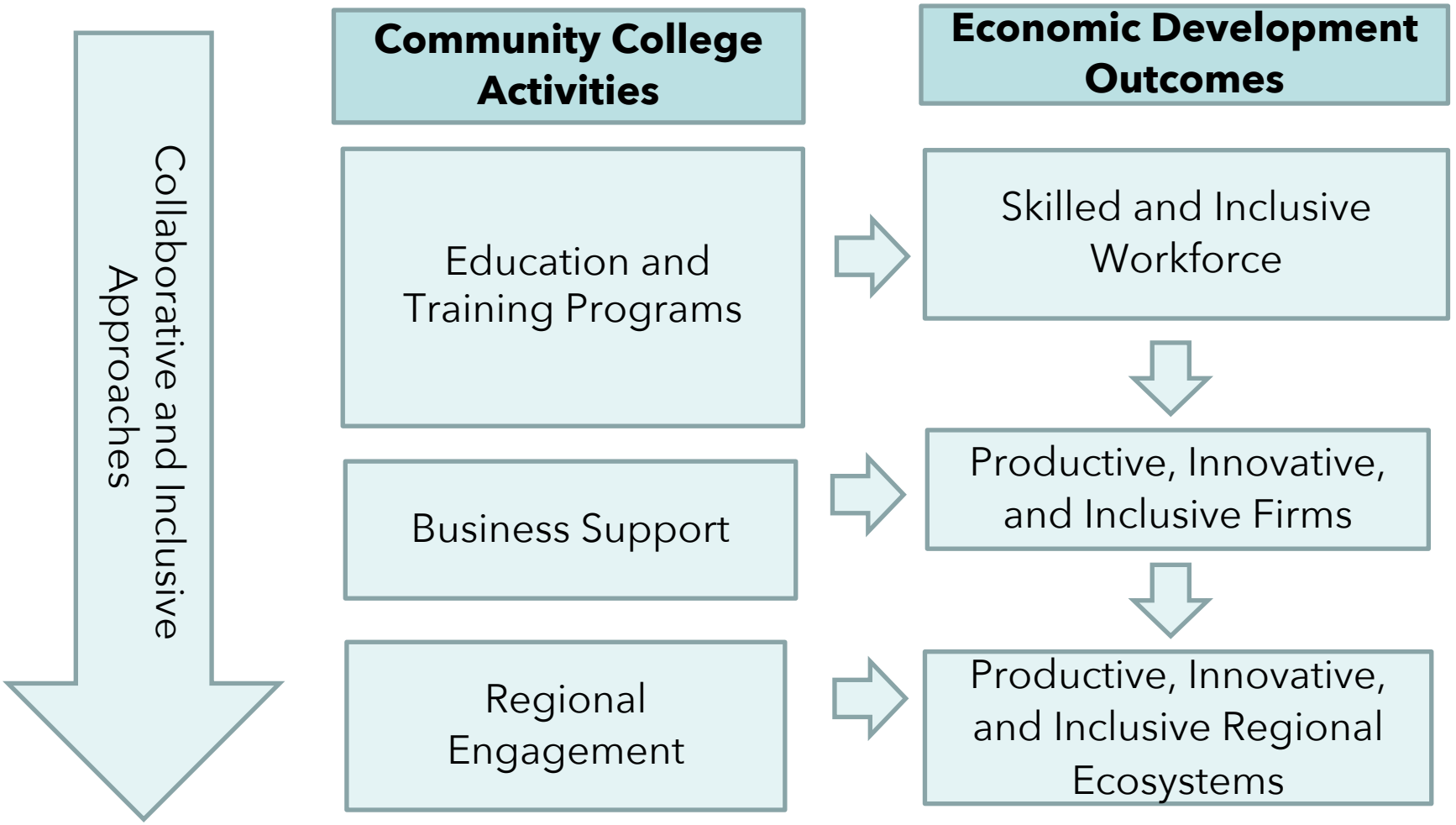
Economic Development

All the activities that seek to promote economic activity in a region, state, or country

Inclusive economic development refers to access to economic growth for all actors in an economy is an important lens for economic development

Geographic focus can include national, state, regional, or local; for community colleges, it is often regional

Community Colleges & Economic Development



Community College Economic Development Activities

Education and Training

- Courses & programs aligned with local workforce needs
- Customized training

Business Support

- Entrepreneurship training; small-business incubation and assistance
- Opening up facilities for use by local companies
- Technology transfer
- Applied research

Regional Engagement

- Conducting economic scans
- Participation in local economic planning/policymaking
- Assistance in attracting employers to the region
- Convening regional stakeholders

Grantee Review Methods

- Analysis of EvaluATE survey data, 2010, 2018
- Interviews with ATE grantees:
  - Selection based on review of grant abstracts and recommendations from advisory board and former project officers; 39 grantees invited for interview
  - Interviews conducted with 28 respondents from 23 grantees, including national & regional centers, and projects
  - Conducted Mar. – Nov. 2022 via Zoom
  - Transcribed, summarized, reviewed for themes, completed structured analysis template

Grant Focus

- Most grantees are focused on workforce development.
- Few grantees intentionally articulated economic development goals
- Most ATE centers did focus on economic development goals.

Collaborations with *external organizations*

- Collaborations ***Industry associations*** *provide various kinds of support*
- ***Four-year institutions*** promote innovation, provide subject matter expertise
- ***High schools*** are a pipeline to the workforce and can connect to underrepresented populations
- 2 levels of collaboration emerged
  - Participating
  - Leading

Activities related to Economic Development

- *Providing small business **incubation** and **entrepreneurship***.
- Generating ***economic research*** to support economic development.
- Working with universities to generate ***innovative uses of technology***.
- Coordinating efforts with industry to ***promote student hands-on learning***.
- Conducting outreach to ***high-need communities*** to promote inclusive economic development.
- Participating in ***new employer recruitment*** to a region.
- ***Convening regional stakeholders*** both workforce and economic development stakeholders.

In-Depth Regional Case Studies

Focused on 2 Advanced Manufacturing Programs at 8 sites

- *AZ: Pima and Mesa*
- *OH: Columbus State and Lorraine*
- *WI: Gateway Technical College*
- *FL: Daytona State College*

DATA COLLECTION

- *College and program documents*
- *Quarterly Meetings*
- *Virtual interviews of college personnel*
- *Site visits with interviews including industry partners*

FAME Program at DSC

NCATC35 Conference

September 22, 2023

DAYTONA STATE COLLEGE

Fast Facts about DSC

Enrollment 2022/2023 Campus	Headcount	FTE
Advanced Technology College	1,956	482.3
Daytona Beach	18,587	8,010.5
DeLand	1,813	425.2
Deltona	1,413	327.7
Flagler/Palm Coast	1,242	358.4
New Smyrna Beach/Edgewater	765	111.5
Total	**20,702**	**9,715.6**

* Total headcount does not equal the sum of the campuses because individual students take courses on more than one campus.

Program 2022/2023	Headcount	FTE
Baccalaureate	1,797	854.9
Associate of Arts	7,207	5,386.8
Associate of Science	3,189	2,042.1
Certificate	1,919	1,255.5
GED	265	27.4
ESOL	601	92.9
Adult Basic Education	379	56.0

* Program is the program the student has declared at the end of the Drop/Add period for each semester enrolled.

Special Populations 2022/2023	Headcount
Dual Enrollment	2,916
Veterans	1,445
Athletes	281

Student Profile 2022/2023	College	Adult Ed	Cont. Ed
White	55%	26%	46%
African American	13%	11%	8%
Hispanic	22%	53%	9%
Asian	3%	4%	1%
Two or more Races	5%	2%	2%
Unknown (Not Reported)	2%	3%	33%

* Total percentage of students does not add up to 100% because some students report multiple race/ethnicity.
* American Indian/Alaskan Native, Pacific Islander & Non Resident Alien <3%.

Male	37%	38%	48%
Female	57%	61%	47%
Unknown (Not Reported)	6%	1%	5%
Full-Time (FA 22)	36%		
Average Age	26	35	37
Average Class Size	21		

Financial Aid 2022/2023	Number of Awards	Percentage of Students	Number of Students	Dollars Awarded
Grants	19,447	34.1%	6,209	$26,509,332.83
Loans	6,901	15.7%	2,859	$10,805,732.43
Scholarships	2,836	8.2%	1,501	$3,274,376.55
Work Study	184	0.7%	130	$323,679.89
Total**	**29,368**	**58.7%**	**10,699**	**$40,913,121.70**

**Total number of students and percent does not equal the sum by financial aid type because most students receive more than one type of aid.

Degrees & Certificates Awarded 2022/2023	
Baccalaureate	416
Associate of Arts	1,457
Associate of Science	566
Certificate/EPI	858
Total	**3,297**
GED	172

Personnel (Fall 2022)		
Faculty	234	16.7%
Staff	571	40.6%
Administrators	61	4.3%
Adjunct Faculty (Part-time)	539	38.4%
Female	756	53.8%

Tuition 2022/2023	In-State	Out of State
Associate Degree (per credit)	$79.22	$311.18
Baccalaureate Degree (per credit)	$91.79	$550.43
Vocational Certificates (per voc credit)	$68.53	$276.09
Adult Education (per student)	$30.00	$30.00

Population (2022 Bureau of Economic and Business Research)	
Flagler County	124,202
Volusia County	572,815
Florida	22,276,132

Unemployment Rates (June 2023)	
Flagler County	3.6%
Volusia County	3.2%
Florida	3.0%
U.S.	3.6%

FAME - AMT

- Federation for Advanced Manufacturing Education
  - Advanced Manufacturing Technician program
  - Originated with Toyota (ca 2005 in KY)
- Employer chapter partners with a local college
- FL Sunshine Chapter with support of the VMA, first chapter in Florida
- VCS has been instrumental to recruitment

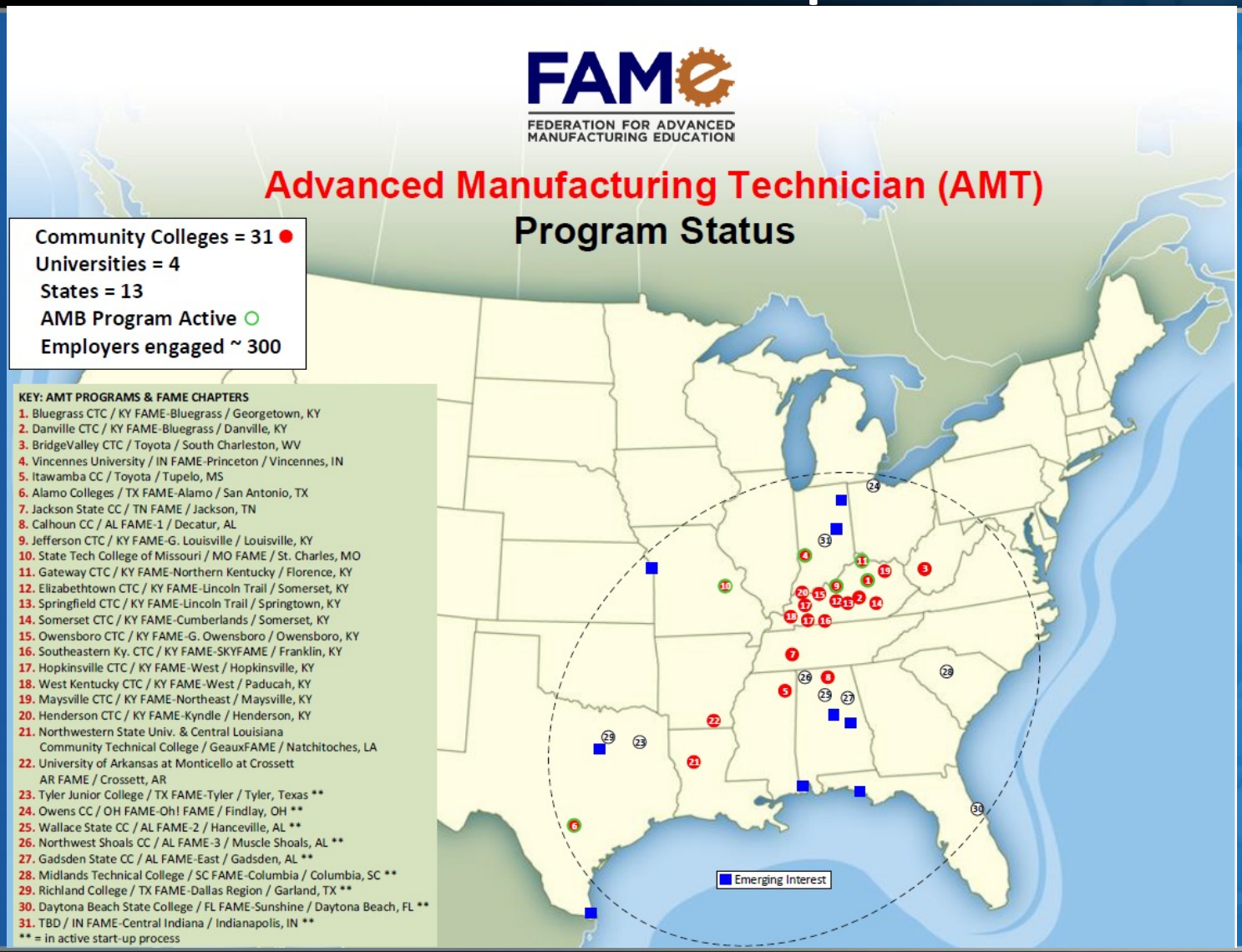
Connections with Industry

- Volusia Manufacturers Association
  - Education Committee
  - FAME program, Sunshine chapter
- Work Experience Coordinator (Perkins)
  - Co-op placement
  - Industry Advisory Board
- Work Based Learning Advisor (Title III)
  - FAME & CET student support

Connections - continued

- Career Source
- Chamber of Commerce
- Team Volusia
- Volusia County
- Southeast Volusia Manufacturing & Technical Coalition
- Tech Corridor
- Regional economic development

FAME Map


FAME
FEDERATION FOR ADVANCED MANUFACTURING EDUCATION
Advanced Manufacturing Technician (AMT)
Program Status
Community Colleges = 31
Universities = 4
States = 13
AMB Program Active
Employers engaged ~ 300
KEY: AMT PROGRAMS & FAME CHAPTERS
1. Bluegrass CTC / KY FAME-Bluegrass / Georgetown, KY
2. Danville CTC / KY FAME-Bluegrass / Danville, KY
3. BridgeValley CTC / Toyota / South Charleston, WV
4. Vincennes University / IN FAME-Princeton / Vincennes, IN
5. Itawamba CC / Toyota / Tupelo, MS
6. Alamo Colleges / TX FAME-Alamo / San Antonio, TX
7. Jackson State CC / TN FAME / Jackson, TN
8. Calhoun CC / AL FAME-1 / Decatur, AL
9. Jefferson CTC / KY FAME-G. Louisville / Louisville, KY
10. State Tech College of Missouri / MO FAME / St. Charles, MO
11. Gateway CTC / KY FAME-Northern Kentucky / Florence, KY
12. Elizabethtown CTC / KY FAME-Lincoln Trail / Somerset, KY
13. Springfield CTC / KY FAME-Lincoln Trail / Springtown, KY
14. Somerset CTC / KY FAME-Cumberlands / Somerset, KY
15. Owensboro CTC / KY FAME-G. Owensboro / Owensboro, KY
16. Southeastern Ky. CTC / KY FAME-SKYFAME / Franklin, KY
17. Hopkinsville CTC / KY FAME-West / Hopkinsville, KY
18. West Kentucky CTC / KY FAME-West / Paducah, KY
19. Maysville CTC / KY FAME-Northeast / Maysville, KY
20. Henderson CTC / KY FAME-Kyndle / Henderson, KY
21. Northwestern State Univ. & Central Louisiana Community Technical College / GeauxFAME / Natchitoches, LA
22. University of Arkansas at Monticello at Crossett AR FAME / Crossett, AR
23. Tyler Junior College / TX FAME-Tyler / Tyler, Texas **
24. Owens CC / OH FAME-Oh! FAME / Findlay, OH **
25. Wallace State CC / AL FAME-2 / Hanceville, AL **
26. Northwest Shoals CC / AL FAME-3 / Muscle Shoals, AL **
27. Gadsden State CC / AL FAME-East / Gadsden, AL **
28. Midlands Technical College / SC FAME-Columbia / Columbia, SC **
29. Richland College / TX FAME-Dallas Region / Garland, TX **
30. Daytona Beach State College / FL FAME-Sunshine / Daytona Beach, FL **
31. TBD / IN FAME-Central Indiana / Indianapolis, IN **
** = in active start-up process
Emerging Interest

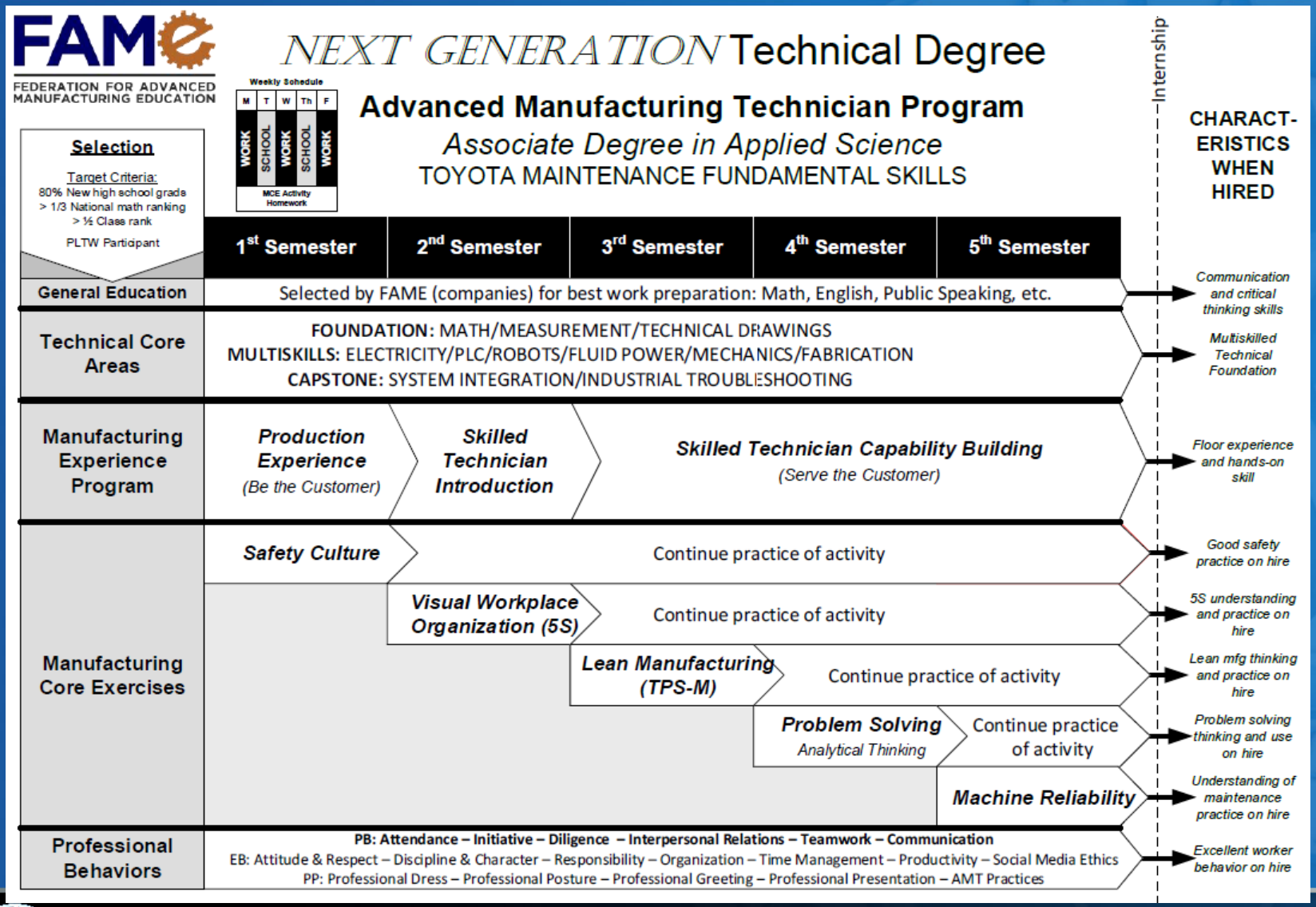
FAME AMT

- Students enrolled in the AS Engineering Technology
- Each student interviewed and sponsored by a local company
- Work 3 days/week, attend class 2 days/week
  - Cover FAME topics and college courses
- Progress as a cohort over 5 terms
- Meet academic and attendance expectations

FAME AMT Content

- Each semester has a theme
  - MCE-1 (Safety Culture)
  - MCE-2 (Visual Workplace Organization/5S)
  - MCE-3 (Lean Manufacturing)
  - MCE-4 (Problem Solving)
  - MCE-5 (Machine Reliability)
- Professional Behaviors are reinforced throughout the curriculum

Skills & Competencies



Employer Roles/Responsibilities

- Actively Track Progress
- Regularly check to ensure that the FAME student is on track with their company side plan
- Regularly check with their trainers and mentors if they are developing satisfactorily
- Regularly check with their school leaders to confirm their performance and progress there
- Address problems as soon as they occur

Eligibility Requirements

- Be 18 years of age by program start date
- Have a Standard High School Diploma or GED
- Be a US citizen or eligible for work in the US
- Meet placement test score requirements (must be college ready)
- Commitment to remaining drug-free
- Complete the Daytona State College Admissions Application
- Complete the FAME Application
- Schedule the Placement Test
- Submit Academic Transcripts
- Apply for Financial Aid

Impact of FAME

- Opened opportunity to include more manufacturing lab assignments
- Hands-on experience with different types of production processes
- Updated PLC equipment and robots
- Knowledge and skills learnt in classroom applied at workplace with employers cooperation

FAME impact on Employers

- Staff to ensure growth and proper oversight
- Cost of additional employee
- Time to train
- Benefit of implementing what is learned in class
- Benefits of learning across multiple departments

Current Status

- First cohort graduated – 100% employed
- Two cohorts (Tue/Thu, Mon/Wed)
- Primarily HS graduates (85%)
  - Attrition first term
  - Math skills (COVID effect)
- Students that persist get permanent job offers

Questions/Comments

Project Team Contacts

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