

Conference Program



#ATEPI

# INNOVATION & IMPACT: ATE FOR THE FUTURE

**2019** ATE  
PRINCIPAL  
INVESTIGATORS  
CONFERENCE  
OCTOBER 23-25



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As the voice of the nation's community colleges, the American Association of Community Colleges (AACC) delivers educational and economic opportunity for approximately 12 million diverse students in search of the American Dream. Uniquely dedicated to access and success for all students, AACC's member colleges provide an on-ramp to degree attainment, skilled careers, and family-supporting wages. Located in Washington, D.C., AACC advocates for these not-for-profit, public-serving institutions to ensure they have the resources and support they need to deliver on the mission of increasing economic mobility for all.



# GENERAL INFORMATION

## INNOVATION AND IMPACT: ATE FOR THE FUTURE

Twenty-Sixth National ATE Principal Investigators' Conference

October 23–25, 2019 • Omni Shoreham Hotel • Washington, DC

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### Hotel Information

Omni Shoreham Hotel (Conference site)  
2500 Calvert Street, NW  
Washington, DC  
202-234-0700

### Overflow Hotel Information

Marriott Wardman Park 2660 Woodley Road, NW Washington, DC 202-328-2000	Washington Hilton 1919 Connecticut Ave., NW Washington, DC 202-483-3000
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### Registration Hours

ATE Registration Desk, West Conference Foyer

Wednesday:	10:00 am – 8:00 pm
Thursday:	7:00 am – 6:00 pm
Friday:	7:30 am – 12:30 pm

### Badge Identification

Each person who registers for the ATE Conference must wear their name badge for entry into sessions, meal events, receptions, and the exhibit hall.

### Accessibility Information

All meeting rooms can be accessed through the elevators in the West area of the hotel with the exception of the Regency and Ambassador Ballrooms. A wheelchair lift is located next to the Ambassador Ballroom main entrance and can be taken down to the Regency level for entry to both Ambassador and Regency Ballrooms. Restrooms with wheelchair access are located on both Level 1B and 2B (inside of the Health Club); on the lobby level; and in Robert's Restaurant.

### Twitter: #ATEPI

### Event Code of Conduct

The American Association of Community Colleges (AACC) seeks to foster a welcoming experience for all participants. We expect all conference participants, presenters, sponsors, employees, and staff to recognize that this event is a place for the open exchange of opinions by diverse individuals, and as such, respect and inclusivity for all is expected. In furtherance of this purpose, while disagreement is expected, any behavior, whether personal or professional, that is unwelcome and offensive, or shows disrespect or aggression will not be tolerated. Please see the event website for the complete Code of Conduct.

# SCHEDULE-AT-A-GLANCE

WEDNESDAY, OCTOBER 23, 2019

## PRECONFERENCE ACTIVITIES

10:00 am – 8:00 pm	<b>Conference Registration</b> <a href="#">West Conference Foyer</a>
Noon – 5:30 pm	<b>Showcase I Set-Up</b> <a href="#">Exhibit Hall</a>
1:00 – 5:00 pm	<b>Workshop A: Getting Started</b> <i>Advance Registration and Ticket Required</i> <a href="#">Palladian</a>
1:00 – 4:00 pm	<b>Workshop B: ATE PI Survival Guide—Surviving and Thriving in the ATE Program</b> <i>Advance Registration and Ticket Required</i> <a href="#">Ambassador</a>
1:00 – 5:00 pm	<b>Workshop C: STEM Makeover with Accessibility and Universal Design for Learning</b> <i>Advance Registration and Ticket Required</i> <a href="#">Congressional</a>
1:00 – 5:00 pm	<b>Workshop D: Leading for Equity in ATE—Transforming Systems to Broaden Participation in STEM</b> <i>Advance Registration and Ticket Required</i> <a href="#">Diplomat</a>
1:00 – 4:00 pm	<b>Workshop E: Impact Evaluation Essentials—Why, What, and How</b> <i>Advance Registration and Ticket Required</i> <a href="#">Empire</a>
1:30 pm	<b>ATE Student Meet &amp; Greet</b> <i>Open to ATE Students Only</i> <a href="#">Executive</a>

## CONFERENCE OPENING

5:45 – 7:00 pm	<b>Opening Plenary Session: The Future of Work—Implications for Education and Skill</b> <a href="#">Regency</a>
7:00 – 9:15 pm	<b>Showcase I and Welcome Reception</b> <a href="#">Exhibit Hall</a>
9:15 – 10:00 pm	<b>Showcase I Breakdown</b> <a href="#">Exhibit Hall</a>

## THURSDAY, OCTOBER 24, 2019

7:00 am – 6:00 pm	<b>Conference Registration</b> <a href="#">West Conference Foyer</a>
7:30 am – 3:30 pm	<b>Universal Access Lab</b> <a href="#">Committee</a>
7:30 – 8:45 am	<b>Showcase II Set-Up</b> <a href="#">Exhibit Hall</a>
7:30 – 8:45 am	<b>Breakfast</b> <a href="#">Regency</a>
7:45 – 8:45 am	<b>Breakfast Roundtables</b> <a href="#">Ambassador</a>
9:00 – 10:00 am	<b>Concurrent Sessions</b>
	<b>Session 1: The Impact of Artificial Intelligence through Education to Reskill Industry</b> <a href="#">Palladian</a>
	<b>Session 2: Understanding Apprenticeship Types, Models, and Experiences</b> <a href="#">Diplomat</a>
	<b>Session 3: Broadening Impact for Professionals in the ATE Community and Beyond</b> <a href="#">Empire</a>
	<b>Session 4: SEMI-Certs: An Innovative Semiconductor Technician Certification Paradigm Based on a Universal Advanced Manufacturing Competency Model</b> <a href="#">Hampton</a>
9:00 – 11:00 am	<b>Global Career Readiness &amp; Industry “Speed Networking” Session for ATE Students</b> <i>Open to ATE Students Only</i> <a href="#">Executive</a>
10:00 – 10:10 am	<b>Refreshment Break</b> <a href="#">Diplomat, Empire, and Hampton Foyers</a>
10:10 – 11:00 am	<b>Forum and Discussion Sessions</b>
	<b>Technician Education, Lasers, and Solar Powered Cars—International Perspectives from Germany</b> <i>Forum: Track 1</i> <a href="#">Diplomat</a>
	<b>Preparing NextGen STEM/CTE Teachers in CA: Makerspaces and Innovation</b> <i>Forum: Track 1</i> <a href="#">Congressional B</a>
	<b>The Impact of Artificial Intelligence through Education to Reskill Industry—Discussion Round</b> <i>Discussion: Track 1</i> <a href="#">Palladian</a>
	<b>Educator’s Equity in STEM II: Fostering Equitable Learning Environments</b> <i>Forum: Track 2</i> <a href="#">Empire</a>
	<b>Universal Design for Learning in STEM Technician Education</b> <i>Forum: Track 3</i> <a href="#">Governors</a>
	<b>Recruiting and Retaining a Wider Representation of Students with Autism</b> <i>Discussion: Track 3</i> <a href="#">Calvert</a>

## THURSDAY, OCTOBER 24, 2019

10:10 – 11:00 am

### Forum and Discussion Sessions (continued)

#### Targeted Efforts to Engage Stakeholders in Logistics Pathways

Discussion: Track 3

[Council](#)

#### A Toolkit for Improving Professional Development Evaluation

Discussion: Track 4

[Cabinet](#)

#### Life after School: Career Pathways for Technician Students

Discussion: Track 4

[Senate](#)

#### Working with Industry and Community Partners to Ready Students in Unmanned Aerial Systems (UAS)

Forum: Track 5

[Hampton](#)

#### How to Keep Low Enrollment Programs Open

Discussion: Track 5

[Capitol](#)

#### Creating Efficiency and Scale with Specialized Support Roles

Discussion: Track 5

[Forum](#)

#### Effective Strategies to Prepare Annual Reports: Demystifying the Process

Forum: Track 6

[Congressional A](#)

#### All About Archiving with ATE Central

Discussion: Track 6

[Embassy](#)

11:10 am – Noon

### Forum and Discussion Sessions

#### Integrated Skills for Manufacturing, Process Technology, and Instrumentation

Forum: Track 1

[Hampton](#)

#### Understanding Apprenticeship Types, Models, and Experiences—Discussion Session

Discussion: Track 1

[Diplomat](#)

#### Preparing a Workforce for New, Growing, or Yet-to-Arrive High-Tech Jobs

Discussion: Track 1

[Embassy](#)

#### Rural Reach: Engaging Students from Rural Areas in STEM Exploration

Forum: Track 3

[Congressional B](#)

#### Blended Learning and Skills Development Using Virtual Labs and Augmented Reality (AR)

Forum: Track 3

[Empire](#)

#### How ATE PIs at HSIs Engage Hispanic Students in Technician Programs

Forum: Track 3

[Governors](#)

#### Resources for Veterans Transitioning into Civilian Higher Education

Discussion: Track 3

[Calvert](#)

## THURSDAY, OCTOBER 24, 2019

11:10 am – Noon	<b>Forum and Discussion Sessions (continued)</b>
	<p><b>Contextualizing Math for Technician Success in the Skilled Trades</b>  <i>Discussion: Track 3</i>  <a href="#">Council</a></p>
	<p><b>What Does Industry Really Need from Young Employees?</b>  <i>Discussion: Track 3</i>  <a href="#">Senate</a></p>
	<p><b>Achieving a Center of Academic Excellence in Cyber Defense Designation</b>  <i>Forum: Track 4</i>  <a href="#">Palladian</a></p>
	<p><b>Community-Driven Solutions to ATE Evaluation Challenges</b>  <i>Discussion: Track 4</i>  <a href="#">Cabinet</a></p>
	<p><b>Enter the Matrix: Building a Rubric for Measuring Industry Partnerships</b>  <i>Discussion: Track 5</i>  <a href="#">Capitol</a></p>
	<p><b>Building a Statewide Program through Partnerships Addressing the Technical Workforce Needs of the Grape and Wine Industry</b>  <i>Discussion: Track 5</i>  <a href="#">Forum</a></p>
	<p><b>Leaving a Legacy: Sustaining Impact after Grant Funding Concludes</b>  <i>Forum: Track 6</i>  <a href="#">Congressional A</a></p>
Noon – 2:00 pm	<p><b>Networking Lunch</b>  <a href="#">Regency</a></p>
12:30 – 2:00 pm	<p><b>ATE Student/Alumni Poster Session</b>  <a href="#">Ambassador</a></p>
2:15 – 2:45 pm	<b>Demonstration Sessions</b>
	<p><b>Active Learning Strategies in the Geospatial Sciences</b>  <i>Demonstration: Track 1</i>  <a href="#">Congressional A</a></p>
	<p><b>Energy Efficiency! Learn How to Implement in Your Curriculum</b>  <i>Demonstration: Track 1</i>  <a href="#">Govenors</a></p>
	<p><b>Wondering How to Connect with Hispanic Students?</b>  <i>Demonstration: Track 1</i>  <a href="#">Congressional B</a></p>
	<p><b>Developing a Digital Badge System for Student Engagement</b>  <i>Demonstration: Track 3</i>  <a href="#">Hampton</a></p>
	<p><b>STEM Camp Hero: Biomedical Engineering, Video Games, and Robots</b>  <i>Demonstration: Track 3</i>  <a href="#">Palladian</a></p>
	<p><b>Teaching the Fundamentals of Blockchains and Smart Contracts</b>  <i>Demonstration: Track 3</i>  <a href="#">Diplomat</a></p>
	<p><b>Backtracking Alumni: Using IR to Inform Student Outcomes Data</b>  <i>Demonstration: Track 4</i>  <a href="#">Empire</a></p>

## THURSDAY, OCTOBER 24, 2019

2:15 – 2:45 pm	<p><b>Demonstration Sessions (continued)</b></p> <p><b>Bridging the Gap Between Industry and Academia</b>  <i>Demonstration: Track 5</i>  <a href="#">Executive</a></p> <p><b>Successful Data Tracking for Grant Evaluation and Reporting</b>  <i>Demonstration: Track 6</i>  <a href="#">Capitol</a></p>
3:00 – 3:30 pm	<p><b>Demonstration Sessions</b></p> <p><b>TechBot—Mobile Multitasking 3D Printer</b>  <i>Demonstration: Track 1</i>  <a href="#">Empire</a></p> <p><b>Virtual/Augmented Reality and the Future of Workforce Training</b>  <i>Demonstration: Track 1</i>  <a href="#">Hampton</a></p> <p><b>Using ArcGIS Community Analyst to Engage Students and Community</b>  <i>Demonstration: Track 1</i>  <a href="#">Congressional A</a></p> <p><b>Developing Photonics Education in Iowa’s Rural High Schools</b>  <i>Demonstration: Track 3</i>  <a href="#">Executive</a></p> <p><b>Innovative Resources for Teaching Cybersecurity and Other STEM Courses</b>  <i>Demonstration: Track 3</i>  <a href="#">Palladian</a></p> <p><b>Opening Technician Pathways for Deaf/HH: Cases and UDL for STEM</b>  <i>Demonstration: Track 3</i>  <a href="#">Diplomat</a></p> <p><b>Create a Portable, Affordable, Hands-On Activity for Advanced Manufacturing Training</b>  <i>Demonstration: Track 5</i>  <a href="#">Governors</a></p> <p><b>Is There A Podcast in Your Future?</b>  <i>Demonstration: Track 6</i>  <a href="#">Congressional B</a></p> <p><b>Streamlining Workflow Processes with Trello</b>  <i>Demonstration: Track 6</i>  <a href="#">Capitol</a></p>
3:45 – 6:00 pm	<p><b>Showcase II and Reception</b>  <a href="#">Exhibit Hall</a></p>
6:00 – 6:45 pm	<p><b>Showcase II Breakdown</b>  <a href="#">Exhibit Hall</a></p>



## FRIDAY, OCTOBER 25, 2019

7:30 am – 12:30 pm	<b>Conference Registration</b> <a href="#">West Conference Foyer</a>
7:30 – 8:45 am	<b>Breakfast</b> <a href="#">Regency</a>
7:30 – 8:45 am	<b>ATE Student/Alumni Recognition Breakfast</b> <i>By Invitation Only</i> <a href="#">Palladian</a>
7:45 – 8:45 am	<b>Breakfast Roundtables</b> <a href="#">Ambassador</a>
9:00 – 10:00 am	<b>Plenary Session: Artificial Intelligence + Human Intelligence = Deep Learning + Deeper Learning</b> <a href="#">Regency</a>
10:15 am – 12:30 pm	<b>High Impact Workshops</b>
	<b>Workshop 1: How to Develop a Coordination Network (CN) Concept in Preparation for Submitting a Proposal</b> <a href="#">Diplomat</a>
	<b>Workshop 2: Moving Up &amp; Second Chance How-To Pathways for Proposal Success</b> <a href="#">Empire</a>
	<b>Workshop 3: Contextualized Math in ATE Classrooms—What, How, and Why?</b> <a href="#">Palladian</a>
	<b>Workshop 4: Twelve Engaging IoT Activities</b> <a href="#">Hampton</a>
	<b>Workshop 5: Student-to-Workforce Pipeline for 21st Century Cloud Industry Careers</b> <a href="#">Ambassador</a>
	<b>Workshop 6: Broadening Participation—How Gender and Race Theory Informs Our Work</b> <a href="#">Executive</a>
10:15 – 11:15 am	<b>Synergy Meetings</b>
	<b>ATE Getting Started Meet &amp; Greet</b> <a href="#">Bird Cage Walk (Level 2B, Near Health Club)</a>
	<b>Shaping the Future of the Biotechnology Workforce</b> <a href="#">Congressional</a>
	<b>Establishing the Link to STEM Employers in Rural Environments</b> <a href="#">Calvert</a>
	<b>Applying Applied Research Projects Beyond the Study</b> <a href="#">Capitol</a>
	<b>Evolution of Micro Nano Technology Advanced Technical Education</b> <a href="#">Governors</a>

## FRIDAY, OCTOBER 25, 2019

11:30 am – 12:30 pm

### Synergy Meetings

Challenges in Implementing a Competency-Based Education Model

Congressional

International Partnerships and Collaborations—Defining the Skills

Calvert

ATE Regional Networks Focused on the Future of Work

Capitol

Addressing the Need for Manufacturing Technology Instructors

Governors

12:30 – 1:00 pm

Box Lunches & Networking

Committee Room

12:45 – 3:00 pm

ATE Center Directors' Meeting and Lunch

Palladian

# GUIDE TO CONFERENCE SESSIONS

Please refer to the conference schedule for specific session times and room locations.

**BREAKFAST ROUNDTABLES:** Breakfast roundtables provide forums for informal discussion of a specific topic among small groups. Attendance is first-come, first-served, and limited to a maximum of 12 people, including the moderator, seated around one round table.

**CONCURRENT SESSIONS:** Concurrent sessions include formal presentations and/or panel discussions that address topics pertaining to the conference theme and the needs of the ATE community.

**DEMONSTRATION SESSIONS:** Demonstration sessions are formal 30-minute presentations that show how to use or apply a pedagogical tool, concept, or model. Presenters will walk attendees through a step-by-step explanation of the tool, concept, or model; its strengths and weaknesses; and how it can best be applied or implemented.

**DISCUSSION SESSIONS:** The discussion session format offers an interactive venue for ATE grantees to share promising practices and lessons learned with other members of the ATE community, to network, share insights, and explore ways to collaborate around similar areas of interest. Discussion moderators serve as facilitators of interactive, substantive discussions and small group activities.

**FORUM SESSIONS:** Forum sessions provide additional venues for formal presentation. Presenters may facilitate an exchange of ideas or share promising practices to provide greater insight into the issues outlined in the conference tracks (listed below).

**HIGH IMPACT PRACTICE WORKSHOPS:** High impact practice workshops are designed to address targeted areas of need within the ATE community, such as those identified in the conference tracks, including but not limited to addressing challenges in student recruitment/retention; grants management, evaluation, stakeholder engagement, and the implementation of new pedagogical or technological tools to keep in pace with industry demand. High impact workshops focus on content that is relevant and applicable across STEM disciplines.

**SYNERGY MEETINGS:** Synergy meetings are informal gatherings of like-minded individuals who wish to discuss a certain topic without a planned agenda. Synergy meetings allow groups to meet and discuss issues relating to regular conference sessions and discuss common challenges.

**SESSION TRACKS:** The conference sessions feature topics pertaining to the conference theme and are organized by the following tracks:

- **Track 1. Innovation and Impact: ATE for the Future**  
Examples of topics in this category include: evidence-based teaching strategies; undergraduate research; competency-based learning; work-based

learning; stackable credentials; credit for prior work experience; internships; apprenticeships; bridge programs; addressing emerging career fields/technologies; career pathways; and assessment strategies and resources.

- **Track 2. Developing STEM Leaders in Innovation**  
Examples of topics in this category include: methods and models for professional and faculty development; faculty externships; leadership development; new PI succession planning; and mentoring programs.
- **Track 3. Engaging Students for Success in STEM**  
Examples of topics in this category include: interactions with secondary school CTE programs; dual enrollment; career awareness/outreach; working with guidance counselors and career coaches; summer camps; direct student interaction with industry; strategies for recruiting and retaining underrepresented students.
- **Track 4. Advancing Innovation through STEM Research and Evaluation**  
Examples of topics in this category include: strategies for conducting institutional and educational research; partnering with four-year colleges on student learning outcomes; strategies for sustaining and scaling programs; strategies for capturing reliable impact data; and evaluation.
- **Track 5. Broadening the Impact of ATE by Engaging Partners**  
Examples of topics in this category include: creating and leveraging partnerships with business and industry, college administrators, secondary schools, funders, local/state government, and/or the community; addressing workforce development needs through collaboration with business/industry; and outreach and marketing to external constituents.
- **Track 6. Sharing Proven Practices in Grants Management and Program Administration**  
Examples of topics in this category include: project and fiscal management; meeting evaluation and accountability challenges; strategies for sustaining and scaling programs; creating and leveraging partnerships; working with college administration; preparing annual reports; and dealing effectively with unforeseen project changes.

**SHOWCASE SESSIONS:** The showcase sessions provide grantees an opportunity to exhibit their projects and share information with other programs, NSF program directors, and guests at the conference. ATE projects and centers present displays that capture the purposes and products of their programs. The displays are divided into two sessions featuring ATE centers and projects.

**STUDENT POSTER SESSION:** ATE students will highlight their program of study and/or career path at a student poster session. Please take the time to visit the student posters and show your support of their efforts.

## PRECONFERENCE ACTIVITIES

■ **10:00 AM – 8:00 PM**

### Conference Registration

West Conference Foyer

■ **NOON – 5:30 PM**

### Showcase I Set-Up

Exhibit Hall

■ **1:00 – 5:00 PM**

### Workshop A: Getting Started

*Advance Registration and Ticket Required*

Palladian

**V. Celeste Carter, Janelle Gosey, Tom Higgins, Ginna Ingram, Jennifer Springman, Heather Watson**, National Science Foundation, Alexandria, VA; **Elaine Craft, Dennis Faber**, Mentor-Connect, Ocean Pines, MD; **Ed Almasy**, ATE Central, University of Wisconsin–Madison, Madison, WI; **Lori Wingate**, The Evaluation Center, Western Michigan University, Kalamazoo, MI

This workshop is recommended for all principal investigators, co-principal investigators, and other team members involved in newly awarded projects and centers in FY19. Others who may find the workshop useful include new awardees in FY18 and other project personnel from prior years who have recently become involved in ATE projects and centers. The goal of this workshop is to make new grantees aware of the reporting and financial requirements of their ATE grant and to connect them with other ATE projects and centers that can help them successfully manage, evaluate, and report on their projects. Participants will have the opportunity to interact with individuals from Mentor-Connect, ATE Central, EvaluATE, and the National Science Foundation and to learn about the various resources they provide. Each participant will be provided with a resource packet. Participants are encouraged to bring questions about the management of their project as there will be ample time for questions and answers. Participants should also bring a copy of their award letter and a laptop computer or tablet with them to the session.

■ **1:00 – 4:00 PM**

### Workshop B: ATE PI Survival Guide—Surviving and Thriving in the ATE Program

*Advance Registration and Ticket Required*

Ambassador

**Osa Brand**, Mentor-Connect, Great Falls, VA; **Chris Carter**, Virginia Space Grant Consortium, Hampton, VA; **Mel Cossette**, MatEdu, Edmonds Community College, Lynnwood, WA; **Louise Petruzzella**, Shoreline Community College, Shoreline, WA; **Pam Silvers**, Asheville-Buncombe Technical College, Asheville, NC; **Karen Wosczyzna-Birch**, RCNGM, Connecticut College of Technology, CT

This workshop is designed for ATE PIs and co-PIs entering the second or third year of their grants who could use

assistance and guidance in elements of grants award management to “survive and thrive” in the ATE program. Come talk with experienced ATE PIs to learn successful tips and hear lessons learned in troubleshooting common challenges such as implementing budget and personnel changes; engaging administrators in support of your efforts; navigating grant guidelines and documents such as the Proposal and Award Policies and Procedures Guide (PAPPG); preparing annual reports; and understanding NSF expectations for ATE awards. There also will be time set aside for small group discussion for participants to bring their own challenges to the table for discussion, feedback, and guidance.

■ **1:00 – 5:00 PM**

### Workshop C: STEM Makeover with Accessibility and Universal Design for Learning

*Advance Registration and Ticket Required*

Congressional

**Rachael Bower**, ATE Central, University of Wisconsin–Madison, Madison, WI; **Cynthia Curry, Sam Johnston**, CAST, Inc., Wakefield, MA

Be inspired to learn accessibility skills to make your ATE project and center STEM curriculum materials, including documents, graphics, and videos, more usable for all learners. Led by experts from CAST (the Center for Applied Special Technology), this interactive workshop will focus on practical uses of Universal Design for Learning (UDL), a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn. As UDL begins with a strong foundation in accessibility, the first half of the workshop will focus on the four accessibility principles of POUR (Perceivable, Operable, Understandable, Robust). POUR will be applied to STEM-related course content through a series of material makeover demonstrations. Common examples of educational materials will be first displayed in traditional formats, followed by POUR-aligned accessible versions. Building on the accessibility best practices from the first half of the workshop, we will then help you think about how to teach learners to transfer accessible information into usable knowledge and will focus on selecting multiple media to reach and engage all learners and providing support for executive functioning and self-regulation, particularly important in STEM classrooms using active learning. Please bring a laptop or tablet to this workshop.

## ■ 1:00 – 5:00 PM

### Workshop D: Leading for Equity in ATE— Transforming Systems to Broaden Participation in STEM

*Advance Registration and Ticket Required*

#### Diplomat

**Kevin Christian**, American Association of Community College, Washington, DC; **Ricardo Romanillos, Ben Williams**, National Alliance for Partnerships in Equity (NAPE), Gap, PA

The NSF ATE program is a powerful mechanism to broaden participation of students in STEM pathways through community and technical college education. This special preconference professional development will build the capacity of ATE PIs, project staff, and partners to lead for equity in ATE. Participants will be equipped with the tools and mechanisms to interrupt systems that hinder progress and outcomes for underrepresented students, including women and girls, students of color, students with disabilities, English language learners, and people from low socioeconomic backgrounds in higher education. You will walk away with actionable ways to leverage ATE-grant funded programs and projects to build towards equity in CTE and STEM. All participants will receive NAPE's workbook, *Micromessaging—Leading for Equity Edition*.

## ■ 1:00 – 4:00 PM

### Workshop E: Impact Evaluation Essentials— Why, What, and How

*Advance Registration and Ticket Required*

#### Empire

**Lyssa Becho Wilson**, Western Michigan University, Kalamazoo, MI; **Ben Reid**, Impact Allies, Ennis, TX

Impact evaluation can be a powerful way to assess the long-term or broader effect of a project. Attention to causal inference, which requires determining if a change can be attributed to the project and its activities, sets impact evaluation apart from other types of evaluation. This workshop is an introduction to impact evaluation and a forum for discussing how it can be realistically implemented in ATE projects. Two examples from ATE evaluations will be highlighted as case studies. ATE principal investigators, project and center staff, and evaluators who attend this workshop will learn (1) the basic tenants of impact evaluation, (2) how to identify impact measures for ATE projects, (3) strategies for determining causal attribution, and (4) the resources needed to implement impact evaluation for your project.

## ■ 1:30 PM

### ATE Student Meet & Greet

*Open to ATE Students Only*

#### Executive

For any ATE students arriving early to the conference, AACC is coordinating an informal meet-and-greet

opportunity—including a guided tour of the Omni Shoreham Hotel, information on its rich history, and a visit to its infamous ghost suite. Join us for some light refreshments, and an opportunity to meet fellow students and AACC staff. Following the hotel tour, interested students can self-organize into groups to go out and explore Washington, D.C.—and an AACC staff member will be on-hand to offer guidance on where to go and to answer questions about the area. Student groups can then head out on their own and return to the Omni Shoreham prior to the conference opening session at 5:45 p.m.

## CONFERENCE OPENING

## ■ 5:45 – 7:00 PM

### Opening Plenary Session

#### Regency

**V. Celeste Carter**, Lead ATE Program Director, National Science Foundation, VA

**Mary E. Heiss**, Senior Vice President for Academic and Student Affairs, American Association of Community Colleges, Washington, DC

**Karen Marrongelle**, Assistant Director, Directorate for Education and Human Resources, National Science Foundation, VA

**Victor R. McCrary**, Vice President for Research and Graduate Programs, University of the District of Columbia; Member, National Science Board, DC

### The Future of Work: Implications for Education and Skill



*Keynote Speaker:* **Paul Osterman**, NTU Professor of Human Resources and Management, Sloan School of Management, Massachusetts Institute of Technology, MA

This keynote address will discuss the impact of technology and demographics on the trajectory of work—focusing on both the quantity and quality of jobs to come—as well as the skills that will be required to fill them. The session will also touch on the contours of America's skill provision system and the organizational and policy challenges that will need to be addressed in modernizing the system to meet challenges going forward.

## ■ 7:00 – 9:15 PM

### Showcase I and Welcome Reception

#### Exhibit Hall

## ■ 9:15 – 10:00 PM

### Showcase I Breakdown

#### Exhibit Hall

## ■ 7:00 AM – 6:00 PM

### Conference Registration

West Conference Foyer

## ■ 7:30 AM – 3:30 PM

### Universal Access Lab

Committee

Come join experts from within and beyond the ATE community to learn how to make your website, curriculum, videos, and other materials accessible to a more diverse group of users—including those with disabilities. The Universal Access Lab will showcase assistive technology, tip sheets, and other resources along with presentations on topics like making media more accessible, the tenants of Universal Design for Learning, and basic website accessibility. With opportunities to get feedback and support from experts on your own challenges, talk with others in the community and share ideas, and get a chance to explore new and exciting technology. The Universal Design Lab has something for everyone.

## ■ 7:30 – 8:45 AM

### Showcase II Set-up

Exhibit Hall

## ■ 7:30 – 8:45 AM

### Breakfast

Regency

## ■ 7:45 – 8:45 AM

### Breakfast Roundtables

Ambassador

## ■ 9:00 – 10:00 AM

## CONCURRENT SESSIONS

### Session 1: The Impact of Artificial Intelligence through Education to Reskill Industry

Palladian

**Rebecca Hartley, Brygg Ullmer**, Clemson University, Clemson, SC; **Sanjay Padhi**, Amazon Web Services, North Weymouth, MA

The transformative role of artificial intelligence (AI) in the workplace, while akin to both the industrial and digital revolutions, is creating impacts of a greater magnitude. Advances in AI and digital learning technologies

impacting STEM technician education are evident in the rapid changes occurring in such fields as advanced manufacturing; grid modernization; transportation, computational, and infrastructure technologies; and data analytics, among others. However, education using traditional means has not been able to deliver the skillset and competencies demanded by the modern technical workforce. This session will offer a general perspective on defining AI, AI's impact on industry and education, and the tools being used to reskill the current and emerging workforce.

### Session 2: Understanding Apprenticeship Types, Models, and Experiences

Diplomat

**Ann Beheler** (Moderator), National Convergence Technology Center, Collin College, Frisco, TX; **Joe Chenelle**, Accenture, Columbus, OH; **Callan Eschenburg**, American Association of Community Colleges, Washington, DC; **Christopher Jewell**, Collins & Jewell Company, Bozrah, CT; **Lesley D. Mara**, Connecticut State Colleges and Universities, Hartford, CT; **Scott Wegeng**, Columbus State Community College, Columbus, OH

Employers increasingly report that students who have participated in apprenticeships are better prepared for the workforce than those who have not. However, there is confusion regarding the types and models for effective apprenticeships. A panel of experts from both education and industry will discuss various types of apprenticeships including, but not limited to, the new, flexible U.S. Department of Labor Industry-Recognized Apprenticeship Program (IRAP) and the Registered Apprenticeship Program. This session will also cover specific implementation models as well as employer experiences. There will be time designated for audience questions.

### Session 3: Broadening Impact for Professionals in the ATE Community and Beyond

Empire

**Megan Heitmann, Kevin Niemi**, ARIS Center, University of Wisconsin–Madison, Madison, WI; **Bernard Siegel**, Regenerative Medicine Foundation, Wellington, FL; **Tom Tubon** (Moderator), Madison College, Madison, WI

Developing the nation's highly skilled STEM technician workforce is an overarching theme for NSF ATE projects and centers. In a case study, presenters will share a comprehensive approach to drive education

and workforce development that is cross disciplinary, leverages the strength of public-private partnerships, and incorporates metrics of accountability and broader impact through collaboration with the NSF ARIS National Center. As ATE-seeded initiatives continue to grow, new partnerships and avenues to explore demand thinking outside of the traditional pedagogy are needed to create transformative change and disruptive innovation. This session will assist attendees in defining the boundaries of being broader impact professionals.

**Session 4: SEMI-Certs: An Innovative Semiconductor Technician Certification Paradigm Based on a Universal Advanced Manufacturing Competency Model**

Hampton

**Robert Geer**, NEATEC, SUNY Polytechnic Institute, Albany, NY; **Mike Russo**, SEMI, Washington, DC

To overcome limitations of static certification models which narrow the technician pipeline, SEMI, the global electronics manufacturing industry association with 2,100 member companies, and SUNY Polytechnic Institute are piloting SEMI-Certs—a multi-level, industry-wide Semiconductor Technician Certification Program based on an innovative Unified Competency Model (UCM). Intrinsically flexible, updateable, and broadly applicable, SEMI’s UCM-based certification will be piloted at 18 technician education programs at two-year and four-year colleges in New York State and expanded to other regions of the U.S. This session will address how this new certification approach will keep technician education programs up-to-date with emerging technologies; and the process for colleges to register their technician education programs to receive SEMI certification.

■ **9:00 – 11:00 AM**

**Global Career Readiness & Industry “Speed Networking” Session for ATE Students**

*Open to ATE Students Only*

Executive

Presenter and Facilitator: **Donald L. McCoy**, Donald McCoy and Associates, Durham, NC

This special, student-only session focuses on providing students the opportunity to talk directly with industry leaders to learn about the skills needed to be successful in the global workplace, as well as successful interviewing tips and techniques for getting the right job. The session

will also include an opportunity for “speed networking,” which is a process designed to facilitate introductions between business/industry representatives and student participants. This session will afford student participants the opportunity to meet accomplished business professionals from a variety of backgrounds and companies. It promises to be an enjoyable, fast-paced, and informative experience as students are given an opportunity to learn and practice interview and communication skills.

■ **10:00 – 10:10 AM**

**Refreshment Break**

Diplomat, Empire, and Hampton Foyers

■ **10:10 – 11:00 AM**

**FORUM AND DISCUSSION SESSIONS**

**Technician Education, Lasers, and Solar Powered Cars—International Perspectives from Germany**

Forum: Track 1

Diplomat

**Mo Hasanovic, Chrysanthos Panayiotou**, Indian River State College, Fort Pierce, FL; **Gary Beasley**, Central Carolina Community College, Sanford, NC; **Ken Walz**, CREATE, Madison College, Madison, WI

The CREATE Energy and Laser-TEC ATE Centers both recently conducted international programs in Germany. The teams will share findings from their recent work abroad, and share lessons learned that can be applied to technician education in the U.S.

**Preparing NextGen STEM/CTE Teachers in CA: Makerspaces and Innovation**

Forum: Track 1

Congressional B

**Maura Devlin-Clancy, Kathleen White**, City College of San Francisco (CCSF), San Francisco, CA

How is the NextGen K–14 STEM and CTE teacher shortage being addressed? Learn how CCSF is developing innovative strategies to boost the number and diversity of students entering the field. Presenters will share information on the Teacher Prep Center, which offers advising, pathways and transfer support; and key strategies such as the use of makerspaces for curriculum innovation for hands-on learning in CTE and STEM. Two complementary CA regional efforts for teacher prep and makerspaces will also be shared.

**SESSION TRACKS**

**Track 1.**

**Innovation and Impact: ATE for the Future**

**Track 2.**

**Developing STEM Leaders in Innovation**

**Track 3.**

**Engaging Students for Success in STEM**

**Track 4.**

**Advancing Innovation through STEM Research and Evaluation**

**Track 5.**

**Broadening the Impact of ATE by Engaging Partners**

**Track 6.**

**Sharing Proven Practices in Grants Management and Program Administration**

### ■ 10:10 – 11:00 AM

## FORUM AND DISCUSSION SESSIONS

### The Impact of Artificial Intelligence through Education to Reskill Industry—Discussion Round

Discussion: Track 1

**Palladian**

**Rebecca Hartley, Brygg Ullmer**, Clemson University, Clemson, SC; **Sanjay Padhi**, Amazon Web Services, North Weymouth, MA

In follow-up to the Thursday morning concurrent session on “The Impact of Artificial Intelligence through Education to Reskill Industry,” join industry and education experts at the table level to take a deeper dive into the impact of artificial intelligence (AI) on industry and education, and the tools being used to reskill the current and emerging workforce. Participants will have the opportunity to share their own tools and experiences, learn from others, and discuss strategies to address the transformative role of AI in the workplace.

### Educator’s Equity in STEM II: Fostering Equitable Learning Environments

Forum: Track 2

**Empire**

**Kathy Albin**, North Idaho College, Coeur d’Alene, ID; **Natalie Hilt**, Stark State College, North Canton, OH; **Gregory Jackson, Ben Williams**, National Alliance for Partnerships in Equity (NAPE), Gap, PA; **Robert Mitchell**, Doña Ana Community College, Las Cruces, NM

Over the past two years, NAPE has delivered two cohorts of its Micromessaging Academy to 92 STEM CTE instructors and secondary partners from 15 community and technical colleges in 11 different states to build STEM CTE educators’ capacity to create an equitable learning environment where women, students of color, and students with disabilities can be successful. Participants increased their attitudes/perceptions, knowledge/skills, and classroom behavior in creating an equitable learning environment. Learn about the project, its outcomes, and innovative approaches to use.

### Universal Design for Learning in STEM Technician Education

Forum: Track 3

**Governors**

**Rachael Bower**, ATE Central, University of Wisconsin–Madison, Madison, WI; **Sam Johnston, Luis Perez**, CAST Inc., Wakefield, MA

AccessATE supports the ATE community in making curriculum accessible for all students and faculty, including those with disabilities. This session will focus on Universal Design for Learning (UDL), which is a curriculum design framework for creating more inclusive learning environments for all. ATE grantees will learn how AccessATE can work with them to create accessible and universally designed curriculum with hands-on assistance, and get a sneak peak at making a UDL syllabus, course media, and OERs.

### Recruiting and Retaining a Wider Representation of Students with Autism

Discussion: Track 3

**Calvert**

**Mary Ellen Gardiner, Jessica Murray**, Stairway to STEM, Reading, TX

Session moderators will begin discussion by sharing six key indicators for general college transition success for students with autism. Moderators will also share insights into simple steps that faculty can take to increase positive outcomes for instructing students with autism. The session will end with small group discussions and a final Q&A.

## SESSION TRACKS

### Track 1.

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### Track 4.

**Advancing Innovation through STEM Research and Evaluation**

### Track 5.

**Broadening the Impact of ATE by Engaging Partners**

### Track 6.

**Sharing Proven Practices in Grants Management and Program Administration**



## ■ 10:10 – 11:00 AM FORUM AND DISCUSSION SESSIONS

### Targeted Efforts to Engage Stakeholders in Logistics Pathways

Discussion: Track 3

#### Council

**Ronnie Brannon, Monica Ayala Jimenez**, Palo Alto College, San Antonio, TX

Come learn about some innovative partnerships between a community college, industry partners, local school districts, and community-based organizations working to bolster interest in logistics pathways. Palo Alto College has established three dual-credit programs with partner high schools where students can earn an Logistics and Supply Chain (L/SC) AAS. The project features targeted recruitment to educate students about L/SC career opportunities and an articulation agreement to a four-year university L/SC applied arts and sciences baccalaureate program.

### A Toolkit for Improving Professional Development Evaluation

Discussion: Track 4

#### Cabinet

**Robin Datta**, Edmonds Community College, Lynwood, WA; **Amy Gullickson**, Centre for Program Evaluation, The University of Melbourne, Victoria, Australia; **Arlen Gullickson**, Western Michigan University, Kalamazoo, MI

The Formative Assessment Systems for ATE 2 project team has developed, through ongoing consultation with ATE PIs, a set of tools to facilitate the assessment of professional development activities for ATE programs. This session will provide an opportunity for participants to try out and discuss the tools for use in their projects, and introduce our 2020 workshop series, which will provide training and support for implementing the tools.

### Life after School: Career Pathways for Technician Students

Discussion: Track 4

#### Senate

**Lakshmi Jayaram, Will Tyson**, University of South Florida, Tampa, FL

This session will discuss findings about school-to-work pathways from the PathTech LIFE surveys of technician education students and PathTech LISTEN follow-up interviews with former students. Most participants did not have STEM work experience before enrolling but entered the technical workforce after completing certificates, licenses, or degrees. Technician education programs are successfully providing pathways for people of all backgrounds to thrive in technical careers and grow the workforce.

### Working with Industry and Community Partners to Ready Students in Unmanned Aerial Systems (UAS)

Forum: Track 5

#### Hampton

**Jonathan Beck**, Northland Community and Technical College, Thief River Falls, MN; **Vince DiNoto**, GeoTech Center, Kentucky Community & Technical College System, Louisville, KY; **Chris Carter**, Virginia Space Grant Consortium, Hampton, VA; **Wing Cheung**, Palomar College, San Marco, CA

This forum will provide an overview of three ATE funded UAS-related initiatives: (1) UAS Operations Technician Education Program (UASTEP), (2) Geospatial Technician Education—UAS (GeoTED-UAS) project, and (3) National Center for Autonomous Technologies. Presenters will discuss their efforts to engage industry and community partners in their activities. Topics such as the analysis of UAS workforce needs, implementation of service learning, and ideas for partnering with other ATE grantees will be discussed.

### How to Keep Low Enrollment Programs Open

Discussion: Track 5

#### Capitol

**James Auld**, NextEra Energy Resources, Juno Beach, FL; **Kevin Cooper**, Indian River State College, Fort Pierce, FL

Across the nation, many STEM programs are being suspended or terminated due to low enrollment. Fortunately, there are creative solutions to help colleges keep low enrollment programs open. This discussion will review some best practices in this arena before opening it to a conversation on outsourcing key courses; redesigning courses to include incumbent workers (non-credit) and credit students in same space; and marketing STEM courses to nontraditional programs.

## ■ 10:10 – 11:00 AM

### FORUM AND DISCUSSION SESSIONS

#### Creating Efficiency and Scale with Specialized Support Roles

Discussion: Track 5

##### Forum

**Matt Groff, Tracy Holbrook**, Cape Fear Community College, Wilmington, NC; **Mark Gerko, Kevin Rooney**, Columbus State Community College, Columbus, OH

Over the past few years, Columbus State and Cape Fear community colleges have created new positions aligned to the NSF ATE framework, each with a different approach. Cape Fear, in North Carolina, has grown enrollment and employer relationships since hiring a Program Liaison who focuses on outreach and recruiting for the college's chemical technology program. In Ohio, Columbus State has implemented five specialized roles matched to student success, outreach, and evaluation to support several ATE projects. Learn how each college has customized a specialist approach to meet their varied needs.

#### Effective Strategies to Prepare Annual Reports: Demystifying the Process

Forum: Track 6

##### Congressional A

**Elaine Craft**, Mentor-Connect, Florence-Darlington Technical College, Florence, SC; **Thomas Higgins**, National Science Foundation, Alexandria, VA; **Erika Louviere, Tanya St. Julien**, South Louisiana Community College, Lafayette, Louisiana; **Pamela Silvers**, Asheville-Buncombe Technical Community College, Asheville, NC

To write effective project reports, PIs must understand NSF's needs and develop a strategy. This session will provide information about planning and report writing and share strategies for developing and submitting annual reports. Questions about NSF program officer expectations, what should and shouldn't be included, and external evaluation will be discussed. Strategies for completing the report on time, developing a timeline, and the mechanics of report submission will be addressed.

#### All About Archiving With ATE Central

Discussion: Track 6

##### Embassy

**Kendra Bouda, Corey Halpin**, ATE Central, University of Wisconsin-Madison, Madison, WI

Join ATE Central staff to learn how archiving benefits your project or center and the details of the process. Whether you are just getting started or are already on your way, now is the time to design strategies and seek support. Participants will gain practical information about the archiving service and explore promising practices and lessons learned. With help from ATE Central staff, they will also craft initial archiving plans or update existing plans, discuss workflow strategies, and more.

## ■ 11:10 AM – NOON

### FORUM AND DISCUSSION SESSIONS

#### Integrated Skills for Manufacturing, Process Technology, and Instrumentation

Forum: Track 1

##### Hampton

**Marilyn Barger**, FLATE, Hillsborough Community College, Tampa, FL; **Dave Carty**, South Arkansas Community College, El Dorado, AR; **Doug Pauley**, Central Community College, Grand Island, NE; **Alan Zube**, Florida State College at Jacksonville, Jacksonville, FL

Industrial Internet of Thing (IIoT) and Industry 4.0 technologies are being implemented at a fast rate in companies worldwide and particularly in related fields like advanced manufacturing and process technology. This forum will explore the common skills found in advanced manufacturing and process technology programs and how colleges can optimize program overlaps, as well as help students find the right path and help industry navigate the similarities and differences to meet workforce needs.

### SESSION TRACKS

#### Track 1.

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#### Track 5.

**Broadening the Impact of ATE by Engaging Partners**

#### Track 6.

**Sharing Proven Practices in Grants Management and Program Administration**

## ■ 11:10 – NOON FORUM AND DISCUSSION SESSIONS

### Understanding Apprenticeship Types, Models, and Experiences—Discussion Session

Discussion: Track 1

#### Diplomat

**Ann Beheler** (Moderator), National Convergence Technology Center, Collin College, Frisco, TX; **Joe Chenelle**, Accenture, Columbus, OH; **Callan Eschenburg**, American Association of Community Colleges, Washington, DC; **Christopher Jewell**, Collins & Jewell Company, Bozrah, CT; **Lesley D. Mara**, Connecticut State Colleges and Universities, Hartford, CT; **Scott Wegeng**, Columbus State Community College, Columbus, OH

This session is a follow-up to the concurrent session on this topic. The panelists from the concurrent session and other ATE leaders will be at roundtables to discuss and answer specific questions regarding the various types of apprenticeships, including required elements for the programs and successful models for implementation. In addition, one table will discuss the virtual internship/externship model and where it fits in the landscape of face-to-face industry-led internships and apprenticeships.

### Preparing a Workforce for New, Growing, or Yet-to-Arrive High-Tech Jobs

Discussion: Track 1

#### Embassy

**Gary Beasley**, Central Carolina Community College, Sanford, NC; **Chrysanthos Panayiotou**, Indian River State College, Fort Pierce, FL; **Jennifer Palestrant, Thomas Stout**, The SMART Center, Tidewater Community College, Norfolk, VA

Technical workforce educational institutions have to prepare students for emerging technologies to meet an existing “growing” career demand, or to create a base of prepared workforce to attract emerging and high-technology employers to your area. The required skill sets for these emerging technologies may demand training in niche areas, beyond general education in a particular technical discipline. Come join a discussion of how to prepare for emerging technologies, before or after they arrive, and brainstorm innovative solutions for engaging both students and employers to enhance an existing curriculum through short modules or certifications.

### Rural Reach: Engaging Students from Rural Areas in STEM Exploration

Forum: Track 3

#### Congressional B

**Cheryl Canova, Shellie Banfield, Gina Greenidge**, Santa Fe College, Gainesville, FL; **David Dunkle, Bill Eustace**, North Florida College, Madison, FL

Attracting students to high-technology fields and matching them with future employers is a challenge. This presentation will share best practices from two ATE projects in Florida that are working to meet this challenge. These projects are working to expand student interest and build their efficacy in STEM skills. Participants will hear about careers in high paying STEM fields, how to connect to employers in their local areas, and be challenged to seek out career fields that may be new to them.

### Blended Learning and Skills Development Using Virtual Labs and Augmented Reality (AR)

Forum: Track 3

#### Empire

**Yakov Cherner**, ATeL, LLC, Swampscott, MA; **Bruce Van Dyke**, Quincy College, Quincy, MA; **Gary Mullett**, Springfield Technical Community College, Springfield, MA

The session presents two sets of activity-based adaptable virtual laboratories (v-Labs). Virtual Energy Efficient Household provides an interactive context for cross-disciplinary learning and teaching STEM topics related to sustainable energy, energy efficiency, and the Internet of Things. V-Labs on Biomanufacturing enable students to perform authentic workplace tasks online and prepare for efficient hands-on practice in real labs.

## ■ 11:10 AM – NOON FORUM AND DISCUSSION SESSIONS

### How ATE PIs at HSIs Engage Hispanic Students in Technician Programs

Forum: Track 3

#### Governors

**Ronnia Brannon**, Palo Alto College, San Antonio, TX; **Arora Chandler**, Los Angeles Mission College, Sylmar, CA; **Mel Cossette**, MatEdU, Edmonds Community College, Lynnwood, WA; **Cynthia Pickering**, Science Foundation Arizona, Arizona State University, Tempe, AZ; **Diego Tibaquira**, Miami Dade College, Miami FL

Learn how ATE PIs at two-year Hispanic Serving Institutions (HSIs) are recruiting and retaining Hispanic students in technician programs to increase diversity of ATE and the STEM workforce. Panelists will share challenges and tips for engaging Hispanic and other underrepresented students while creating inclusive STEM learning environments where all students are treated as motivated learners and made to feel welcome. Relevant resources for engaging Hispanic students will also be shared/discussed.

### Resources for Veterans Transitioning into Civilian Higher Education

Discussion: Track 3

#### Calvert

**Rodney Jackson**, GeoTech Center, Kentucky Community & Technical College System, Louisville, KY

This discussion will review assets for veterans. The session will begin with an outline and then review resources such as Service Member Opportunity Colleges (SOCs), the Joint Services Transcripts (JST), a military crosswalk of competencies, publicly available military skills translators, as well as a variety of sites that may prove useful to veterans who are entering academia. The session will conclude with a demonstration of a military crosswalk of recommended credit for prior learning.

### Contextualizing Math for Technician Success in the Skilled Trades

Discussion: Track 3

#### Council

**Anita Grierson**, Science Foundation Arizona, Arizona State University, Tempe, AZ; **Reetika Dhawan**, Arizona Western College, Yuma, AZ

Eight rural Arizona community colleges are working together on the contextualization of math for welding, automotive, electronics, construction, and other CTE programs. Depending on the college, either the technical domain class or the technical math class is being modified. If your institution has completed math contextualization or is considering doing so, we invite you for a discussion of the opportunities, resources, challenges, lessons learned, resource sharing, and best practices.

### What Does Industry Really Need from Young Employees?

Discussion: Track 3

#### Senate

**Christine Delahanty**, Bucks County Community College (BCCC), Newtown, PA

Come and discuss what students need to become workforce ready, and what we as educators can do to help them become more workforce ready. BCCC's project aims to contribute to the national need for a skilled STEM workforce by increasing the number of well-trained engineering technicians. To recruit more students, the project is developing articulation agreements with the college's Center for Workforce Development (CWD)—where credits earned toward an AAS degree in engineering technology will be granted for certifications awarded through the CWD to further ensure workforce readiness.

## SESSION TRACKS

**Track 1.**  
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**Track 6.**  
Sharing Proven Practices in Grants Management and Program Administration

## ■ 11:10 AM – NOON

### FORUM AND DISCUSSION SESSIONS

#### **Achieving a Center of Academic Excellence in Cyber Defense Designation**

Forum: Track 4

##### **Palladian**

**Stephanie Hall, Larry McWherter**, Columbus State Community College, Columbus, OH; **Kyle Jones**, Sinclair College, Dayton, OH

A program of the National Security Agency and the U.S. Department of Homeland Security, National Centers of Academic Excellence (CAE) is a network of higher education institutions recognized for their exceptional cybersecurity programming. Learn how Columbus State Community College and Sinclair Community College leveraged their cyber programming to receive this prestigious designation. Panelists will share their experiences and best practices for replication.

#### **Community-Driven Solutions to ATE Evaluation Challenges**

Discussion: Track 4

##### **Cabinet**

**Emma Perk**, EvaluATE, Western Michigan University, Kalamazoo, MI

This discussion is about what works well in ATE evaluation; what is problematic; and how the expertise and resources in the ATE community can be harnessed to generate community-driven solutions to challenges. Attendees will connect with others in the ATE community and identify opportunities for sharing and collaboration related to evaluation. We encourage all evaluation stakeholders to attend—evaluators, principal investigators, program officers, project staff, grant specialists, and others.

#### **Enter the Matrix: Building a Rubric for Measuring Industry Partnerships**

Discussion: Track 5

##### **Capitol**

**Mary Slowinski**, Bellevue College, Bellevue, WA; **Lana Rucks**, The Rucks Group, Dayton, OH

Effective industry partnerships are crucial to the success of many projects and centers yet recording and measuring these relationships can be challenging with few tools available to capture such data. In response, the Working Partners Research project and the Rucks Group have begun development of a partnership rubric to measure these connections. This interactive session will introduce the rubric, collect input regarding its design and use, and provide information for continued participation.

#### **Building a Statewide Program through Partnerships Addressing the Technical Workforce Needs of the Grape and Wine Industry**

Discussion: Track 5

##### **Forum**

**Michelle Norgren**, VESTA, Missouri State University, Springfield, MO; **Gary Pennycuff**, Pellissippi State Community College, Knoxville, TN

The number of wineries in Tennessee (TN) has grown by 88 percent to a total 77 in just 10 years. To sustain this growth, the industry needs a knowledgeable and skilled technical workforce. Through a partnership of the TN Farm Winegrowers Alliance, the TN Board of Regents, and workforce development organizations, an educational program is being developed at Pellissippi State Community College in collaboration with the VESTA program at Missouri State University. Discussion will focus on how to build partnerships among organizations that have a vested interest in workforce development.

#### **Leaving a Legacy: Sustaining Impact after Grant Funding Concludes**

Forum: Track 6

##### **Congressional A**

**Rebecca Zarch**, SageFox Consulting Group, LLC, Amherst, MA; **Gerhard Salinger**, GLS Educational Consulting, LLC, Albuquerque, NM

This forum will bring together three centers participating in the ATE EPILOGUE study to illustrate what is being learned about the long-term impact of ATE centers. Findings from the first year of the study suggest that the following are significant for long-term impact: the role of partners; having a proven innovation with flexibility/adaptability of that innovation; maintaining a strategic vision that allows for responding to opportunity; knowing when/why to create an external entity; and the importance of funding.

## ■ NOON – 2:00 PM

### **Networking Lunch**

#### **Regency**

## ■ 12:30 – 2:00 PM

### **ATE Student/Alumni Poster Session**

#### **Ambassador**

## ■ 2:15 – 2:45 PM

### DEMONSTRATION SESSIONS

#### Active Learning Strategies in the Geospatial Sciences

Demonstration: Track 1

##### Congressional A

**Amber Ignatius, Sudhanshu Panda, Jeff Turk**, University of North Georgia, Oakwood, GA

Science-based educational research increasingly supports the high value of active learning. The geospatial sciences incorporate active learning strategies such as field observation, experimental methods, hands-on learning, and the use of technology in the classroom. This session will demonstrate implementation of experiential learning methods such as field-based inquiry, metacognition, retrieval practice, and storytelling to promote comprehensive understanding and long-term learning in geoscience.

#### Energy Efficiency! Learn How To Implement in Your Curriculum

Demonstration: Track 1

##### Governors

**Ismail Fidan, Shane Terry (student), Khalid Tantawi**, Tennessee Technological University, Cookeville, TN

In 2018, the SMART Project team developed a unique booklet covering several key points for minimizing energy costs in advanced manufacturing facilities. Such an original work is being distributed via the U.S. Department of Energy's Industrial Assessment Centers. This demonstration will highlight the development efforts and its impact to advanced/smart manufacturing systems. Findings from current beta testing sites will also be shared.

#### Wondering How to Connect with Hispanic Students?

Demonstration: Track 1

##### Congressional B

**Emery DeWitt**, Mentor-Connect, Florence-Darlington Technical College, Florence SC; **Cynthia Pickering**, Science Foundation Arizona, Arizona State University, Tempe, AZ

This demonstration will walk participants through where to find and how to access video resources to connect with Hispanic students. Videos in Spanish will be demonstrated with take-home samples provided. The demo will also include a brief discussion to provide input on what would best support the HSI/Latinx community.

#### Developing a Digital Badge System for Student Engagement

Demonstration: Track 3

##### Hampton

**Jeremy Leffelman, Jaimee Meyer**, Minnesota State Advanced Manufacturing Center of Excellence, Bemidji State University, Bemidji, MN

Dream it. Do it. Minnesota has created a digital pathway that engages students and draws them deeper into manufacturing career exploration. Students who earn all six medals are eligible for a scholarship valued at \$4,000. This demonstration session explores these pathways, which allow students to earn digital badges while they learn about manufacturing and embark on activities such as robotics competitions, summer camps, college campus visits, and tours of manufacturing facilities.

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**Track 6.**  
Sharing Proven Practices in Grants Management and Program Administration

■ 2:15 – 2:45 PM

## DEMONSTRATION SESSIONS

### **STEM Camp Hero: Biomedical Engineering, Video Games, and Robots**

Demonstration: Track 3

**Palladian**

**Lara Sharp**, St. Petersburg College, Clearwater, FL

Want to be a STEM Camp Hero? The presenter will demonstrate activities from the 2019 STEM camps at St. Petersburg College on biomedical engineering integration with robots and video games, robotics coding, and CAD. The demonstration will also include how new community partners joined the team to increase attendance by 650 percent from 2018. Attendees will receive access to camp and grant materials and participate in benchmarking successful camp strategies.

### **Teaching the Fundamentals of Blockchains and Smart Contracts**

Demonstration: Track 3

**Diplomat**

**Debasis Bhattacharya**, University of Hawaii, Kahului, HI

This demonstration introduces participants to programming smart contracts using Ethereum Blockchains and the Solidity programming language. Cryptocurrencies such as bitcoins use blockchains and smart contracts to enforce transactions. Given the popularity of bitcoins and related technologies in the press, this session provides a module for educators to introduce the underlying technology into their classrooms. Participants receive sample programming techniques for creating basic smart contracts.

### **Backtracking Alumni: Using IR to Inform Student Outcomes Data**

Demonstration: Track 4

**Empire**

**Faye Jones, Marcia Mardis**, Florida State University, Tallahassee, FL

In this session, presenters demonstrate alumni tracking models that maximize institutional research (IR) to understand student employment outcomes. A systematic process to track alumni, obtain higher response rates, and provide useful visualization tools is presented. The demonstration includes sharing a backtracking approach to identify junctures in STEM pathways that call for the integration of alumni survey data, historical IR data, and qualitative inquiry. Useful tips for conducting alumni surveys at two- and four-year institutions and visualization tools for stakeholders are shared to understand program impact and the readiness of students for today's dynamic workforce.

### **Bridging the Gap Between Industry and Academia**

Demonstration: Track 5

**Executive**

**Gaffar Gailani, Yu Wang**, CUNY New York City College of Technology, Brooklyn, NY

One of the great challenges facing STEM departments is connection with business and industry. Industry is a very busy environment, and the challenge is to convince an industry partner to have some time to look at some students' work that can benefit and impact this industry partner. If the link is established correctly, it will lead to great professional development for students and bring a new spirit to their work. Students will be motivated if they find a sector interested in their work. Video and materials will be demonstrated to share new strategies to establish industry connections.

## ■ 2:15 – 2:45 PM

### DEMONSTRATION SESSIONS

#### Successful Data Tracking for Grant Evaluation and Reporting

Demonstration: Track 6

Capitol

**Sandra Weber**, The SMART Center, Tidewater Community College, Virginia Beach, VA

Over the last six years, the SMART Center has created an online tracking tool that has allowed them to create a comprehensive outreach database. This database tracks all types of events and statistics including students/ participants reached and materials disseminated. See a demonstration of how this online tool works and learn how it can help more easily prepare for evaluation and annual reporting.

## ■ 3:00 – 3:30 PM

### DEMONSTRATION SESSIONS

#### TechBot—Mobile Multitasking 3D Printer

Demonstration: Track 1

Empire

**Mel Cossette**, MatEdu, Edmonds Community College, Lynnwood, WA; **Ismail Fidan, Andreas Sauter** (student), **Shane Terry** (student), Tennessee Technological University, Cookeville, TN; **Thomas Singer**, Sinclair College, Dayton, OH

Three dimensional (3D) printers are a part of today’s daily life. There are hundreds of types of 3D printers used in education, industry, medicine, research, and development. As part of an ATE Project, TechBot was designed, developed, constructed, and beta tested in 2018 through a collaboration of students and faculty from Tennessee Tech University, Sinclair College, Edmonds Community College, and the University of Louisville. This session will share a number of key findings and demonstrate this cutting-edge printer.

#### Virtual/Augmented Reality and the Future of Workforce Training

Demonstration: Track 1

Hampton

**Heather Ballou, Justin Chenoweth, Josh Webb**, ATEEC, Eastern Iowa Community College, Davenport, IA

What possibilities does a future defined by the transformative powers of virtual and augmented reality technologies hold for us? How will the ability to graft simulated worlds onto our own revolutionize workforce training? In this session, presenters will explore these important questions by demonstrating training solutions already developed in VR/AR, and ask participants to discuss and imagine the grand technological potentialities these technologies suggest the future has in store.

#### Using ArcGIS Community Analyst to Engage Students and Community

Demonstration: Track 1

Congressional A

**Hanna L. Ford**, University of Arkansas, Fayetteville, AR

This session will walk attendees through a marketing exercise in ArcGIS Community Analyst that demonstrates how research business data can be used to help make decisions in community planning, such as identifying a location for a new business, finding a target area for a new product, or identifying a customer base. These problem-solving opportunities are encountered every day in government, industry, and education sectors and offer potential areas of collaboration for students and community partners to work together to solve real-world problems. In addition to a technical step-by-step guide, the presenter will discuss data and spatial awareness learning opportunities, and how this exercise has been used by partner institutions.

### SESSION TRACKS

**Track 1.**  
Innovation and Impact: ATE for the Future

**Track 2.**  
Developing STEM Leaders in Innovation

**Track 3.**  
Engaging Students for Success in STEM

**Track 4.**  
Advancing Innovation through STEM Research and Evaluation

**Track 5.**  
Broadening the Impact of ATE by Engaging Partners

**Track 6.**  
Sharing Proven Practices in Grants Management and Program Administration



■ 3:00 – 3:30 PM

## DEMONSTRATION SESSIONS

### Developing Photonics Education in Iowa's Rural High Schools

Demonstration: Track 3

#### Executive

**Frank Reed**, Indian Hills Community College, Ottumwa, IA

This session focuses on the introduction of the high-growth, high-demand field of photonics to a population rarely afforded such opportunities—rural high school students and teachers. The demonstration will include an engaging, dual-credit online hybrid photonics course designed for rural high school students, as well as highlight photonics-related professional development opportunities for rural high school science and technology teachers. Learn about resources designed to increase the number of rural Iowa high school students in the photonics technician pipeline.

### Innovative Resources for Teaching Cybersecurity and Other STEM Courses

Demonstration: Track 3

#### Palladian

**Michael Qaissaunee**, Brookdale Community College, Middletown, NJ; **John Sands**, CSSIA, Moraine Valley Community College, Palos Hill, IL

Brookdale Community College's E-MATE project and Moraine Valley Community College's CSSIA center have collaborated to develop two innovative new resources. The first is a series of web-based interactive explainers in networking, electronics, and security. The second is a capture the flag (CtF) game modeled on the classic Risk game. Presenters will demonstrate interactives, distribute flash drives with the content, and conclude with a demo of the CtF environment and a competition for participants.

### Opening Technician Pathways for Deaf/HH: Cases and UDL for STEM

Demonstration: Track 3

#### Diplomat

**Sam Johnston**, CAST Inc., Wakefield, MA; **Denise Kavin**, NTID, Rochester Institute of Technology, Rochester, NY; **Margaret Waterman**, BioQUEST Curriculum Consortium, Inc., Cape Girardeau, MO

Engage with a Universal Design for Learning (UDL)-adapted case study, and identify main topics and links to technician careers. Case study methods are versatile, moreso when aligned with UDL. Compared to lectures, case learners have higher levels of engagement, similar content learning, and better problem solving and communication. Presenters will demonstrate how the case analysis engages learners, and share how UDL makes this case accessible to all learners, but especially for those who are deaf/HH. This case study provides ways to strengthen English literacy.

### Create a Portable, Affordable, Hands-On Activity for Advanced Manufacturing Training

Demonstration: Track 5

#### Governors

**Kate Alcott**, NEATEC, SUNY Polytechnic Institute, Albany, NY; **Nathan Roscup**, NEATEC, Mohawk Community College, Utica, NY

While trying to figure out how to build meaningful technician education for a group of soldiers 85 miles away, two colleges combined forces and developed a creative, engaging activity. Presenters will demonstrate how they worked with an industry partner to focus on the right skill sets, developed a supporting curriculum, and designed a capstone activity to assess student understanding. Attendees will leave with content, activity designs, and ideas to utilize advanced manufacturing practices at their own colleges.

### Is There A Podcast in Your Future?

Demonstration: Track 6

#### Congressional B

**Michael Lesiecki**, CORD, Waco, TX

Podcasts can be a unique dissemination tool for your project or center, reaching an audience in new ways. In this session, participants will work through a step-by-step process that describes the design and production of a podcast and key factors to make it successful. Hosting and dissemination will be discussed together with key performance metrics. Participants should prepare by listening to the first episode of the podcast on <https://www.preparingtechnicians.org/podcasts>.

## ■ 3:00 – 3:30 PM

### DEMONSTRATION SESSIONS

#### **Streamlining Workflow Processes with Trello**

Demonstration: Track 6

##### Capitol

**Tara Sheffer**, Columbus State Community College,  
Columbus, OH

Developed by an industrial engineer at Toyota, Kanban is a simple, visual system for productivity. Learn how you can harness the efficient power of Kanban for your team using a free digital tool called Trello. This demonstration will show you how Trello works—and how easy it is to learn. The presenter will discuss a few applications for Trello in grants management, from new-hire orientation to project planning and execution. Participants will leave with ideas for implementation and information about similar tools.

## ■ 3:45 – 6:00 PM

### **Showcase II and Reception**

Exhibit Hall

## ■ 6:00 – 6:45 PM

### **Showcase II Breakdown**

Exhibit Hall

## ■ 7:30 AM – 12:30 PM

### Conference Registration

West Conference Foyer

## ■ 7:30 – 8:45 AM

### Breakfast

Regency

## ■ 7:30 – 8:45 AM

### ATE Student/Alumni Recognition Breakfast

By Invitation Only

Palladian

## ■ 7:45 – 8:45 AM

### Breakfast Roundtables

Ambassador

## ■ 9:00 – 10:00 AM

### Plenary Session: Artificial Intelligence + Human Intelligence = Deep Learning + Deeper Learning

Regency

**Robin Wright**, Deputy Division Director, Division of Undergraduate Education, National Science Foundation, Alexandria, VA



Keynote Speaker: **Charles Fadel**, Founder and Chairman, Center for Curriculum Redesign, Boston, MA

Technologies such as artificial intelligence (AI), biotechnologies, and machine learning are redefining what it means to be human, and

to succeed in life and work. The world of the 21st century bears little resemblance to that of the 19th century, so learning must be deeply redesigned for versatility and adaptability, applying all four dimensions of knowledge, skills, character, and meta-learning (or 21st century skills, including social-emotional learning) and their interdisciplinarity. AI will have a major impact on how we learn, which will be explored without present-day hype.

## ■ 10:15 AM – 12:30 PM

### HIGH IMPACT WORKSHOPS

(High Impact Workshops run for two hours with a scheduled break from 11:15 – 11:30 am)

#### Workshop 1: How to Develop a Coordination Network (CN) Concept in Preparation for Submitting a Proposal

Diplomat

**V. Celeste Carter**, National Science Foundation, Alexandria, VA; **Terryll Bailey**, The Allison Group, Seattle, WA; **Mel Cossette**, MatEdu, Edmonds Community College, Lynnwood, WA; **James Dekloe**, Solano Community College, Fairfield, CA; **Russ Read**, Forsyth Technical College, Winston-Salem, NC; **Tom Tubon**, Madison College, Madison, WI

A CN supports the development of new collaborations to build on existing networks to advance science and technician education through communication and sharing of ideas. The compelling argument for a CN is unique, and the standard project and center proposal claims are neither applicable nor successful for CN proposals. This highly interactive session provides the foundation for a concept paper on a proposed CN, how to determine CN core team, and types of membership structures.

#### Workshop 2: Moving Up & Second Chance How-To Pathways for Proposal Success

Empire

**Osa Brand**, Mentor-Connect, Great Falls, VA; **Elaine Craft**, Mentor-Connect, Florence-Darlington Technical College, Florence, SC; **Jenni Fridgen**, Parkland College, Champaign, IL; **Elizabeth Teles**, Teles Consulting, LLC, Alexandria, VA

Strategies that lead to success when “moving up” from small, new-to-ATE projects to larger ATE projects will be provided by a former NSF ATE program officer and current ATE grantees. In addition, tips for successfully reworking and resubmitting an ATE grant proposal that was declined will be shared. Mentor-Connect mentoring options and technical assistance opportunities that support multiple pathways to success with your next proposal will be outlined and participant questions will be answered.

■ 10:15 AM – 12:30 PM  
HIGH IMPACT WORKSHOPS

**Workshop 3: Contextualized Math in ATE Classrooms—What, How, and Why?**

Palladian

**Amy Prevost, Xueli Wang**, University of Wisconsin–Madison, Madison, WI; **Bethany Sansing-Helton, Ann Thompson, Yan Wang**, Madison College, Madison, WI

Methods and processes that allow community college instructors and educational researchers to effectively design, implement, and evaluate contextualization in the diverse math classrooms that serve ATE students will be presented through (1) an overview of our partnership as instructors and researchers, (2) discussion based on professional development of math contextualization about real problem-solving, (3) an example of a contextualized lesson and lessons learned, and (4) research instruments and early findings.

**Workshop 4: Twelve Engaging IoT Activities**

Hampton

**Kristine Christensen, John Sands**, Moraine Valley Community College, Palos Hills, IL; **Michael Qaissaune**, Brookdale Community College, Middletown, NJ; **Corrinne Sande**, Whatcom Community College, Bellingham, WA

This action-packed hands-on workshop will have participants experience 12 different Internet of Things (IoT)-related activities in a course of 90 minutes followed by discussion. This session will provide classroom tools at no cost that are freely available to students and faculty. The presenters will provide a syllabus and plan of how to implement these activities in a typical classroom.

**Workshop 5: Student-to-Workforce Pipeline for 21st Century Cloud Industry Careers**

Ambassador

**Elodie Billionniere, Eric Meyer**, Miami Dade College, Miami, FL; **Angel Duncan, Myra Roldan**, Amazon Web Services, Miami, FL

This workshop shares strategies for creating in-depth, project-based learning opportunities and access to leading Amazon Web Services (AWS) technology, giving a competitive advantage by strengthening academic offerings that lead to not only an academic credential, but also an industry certification. Attendees will be able to apply curriculum and faculty professional development strategies shared to leverage funding and create partnerships for broader impact and their impacts to student success will be discussed as well.

**Workshop 6: Broadening Participation—How Gender and Race Theory Informs Our Work**

Executive

**Cheryl Calhoun, Chelsea Carnes, Gina Greenidge**, Santa Fe College, Gainesville, FL

The theory of planned behavior implies that ability plus interest equals intention and ultimately planned behavior. As we attempt to attract more women and people of color into STEM fields, we often find that these assumptions don't hold true. What interrupts a learner's intentions? In this workshop, we will discuss relevant race and gender theories to see how they can inform our work as we develop programs to engage underrepresented students.

■ 10:15 AM – 11:15 AM  
SYNERGY MEETINGS

**ATE Getting Started Meet & Greet**

Bird Cage Walk (Level 2B, Near Health Club)

**Rachael Bower** (facilitator), ATE Central, University of Wisconsin–Madison, Madison, WI

For those new to the ATE community, this one-hour informal session will provide the opportunity to talk with several ATE cross-cutting projects and centers that offer support to grantees. Join staff from Evalu-ATE, Mentor Connect, and ATE Central as well as NSF program officers to get questions answered, learn more about a variety of tools and services available, and connect with other new grantees. This session is a great follow up to the Getting Started preconference workshop and an opportunity to get one-on-one time with presenters and program officers.

**Shaping the Future of the Biotechnology Workforce**

Congressional

**Linnea Fletcher**, InnovATEBIO, Austin Community College, Austin, TX; **Mary Slowinski**, Bellevue College, Bellevue, WA

The active and connected members of the biotechnology community have proposed and managed numerous ATE projects, two regional centers, and the Bio-Link National Center. A new national center, InnovATEBIO, has been funded, and one of its roles is listening to and mentoring this community. Please join the center's leadership for a collaborative discussion about InnovATEBIO's structure and goals, best practices for collaborating, supports you would like to see, and visions for our collective future.

## ■ 10:15 AM – 11:15 AM SYNERGY MEETINGS

### Establishing the Link to STEM Employers in Rural Environments

#### Calvert

**William Brandsness, James Stoutamore**, Klamath Community College, Klamath Falls, OR; **Faye Jones, Marcia Mardis**, Florida State University, Tallahassee, FL

High-tech employers and students value internships, but creating meaningful internships can be challenging in remote rural communities. In this synergistic discussion, we will explore ways to effectively integrate employers' views to move students beyond the traditional internship to peer-to-peer and virtual internships that provide real-world skills while enhancing job readiness. We will share best practices for protocols, interviewing, and implementation to enhance and expand your programs.

### Applying Applied Research Projects Beyond the Study

#### Capitol

**Christopher Burbach, Brandon Keller, Chance Lambrecht, Lonny Mitchell**, Northeast Community College, Norfolk, NE

Agriculture is essential to the growth of our country, and the economy. Many college programs across the United States depend on strategic partnerships with industry to enhance students' educational experiences on campus, often including applied research projects. This synergy meeting is designed as a learning exchange to allow technician educators a chance to share how applied research projects can be brought into the classroom to add value to the educational process, as well as provide added value to partnerships.

### Evolution of Micro Nano Technology Advanced Technical Education

#### Governors

**Jared Ashcroft**, Pasadena City College, Pasadena, CA; **Billie Copley**, Nano-Link, Dakota County Technical College, Rosemount, MN; **Bob Ehrmann**, Center for Nanotechnology Education and Utilization, Pennsylvania State University, University Park, PA; **Abe Michelen**, NEATEC, SUNY Polytechnic Institute, Utica, NY; **Matt Pleil**, SCME, University of New Mexico, Albuquerque, NM

The Micro Nano Technology (MNT) community network has heavily impacted ATE. Beginning in 1996, MNT has seen 53 ATE projects and centers. MNT has organized online and hands-on workshops, designed hands-on kits, and produced thousands of downloadable education materials. This synergy meeting will highlight MNT's impact, and discuss future innovations and broadening influence of MNT by engaging new partners. This discussion will engage future educators on possible new MNT-related collaborations.

## ■ 11:30 AM – 12:30 PM SYNERGY MEETINGS

### Challenges in Implementing a Competency-Based Education Model

#### Congressional

**Jeremy Leffelman, Sue Selland-Miller**, Minnesota State Advanced Manufacturing Center of Excellence, Bemidji State University, Bemidji, MN; **Andrew Dahlen, Kirsten Michalke**, Northland Community and Technical College, Thief River Falls, MN

Competency-Based Education (CBE) promises a flexible and individualized delivery versus a traditional, rigid course schedule. A CBE delivery model fits well with educating the incumbent workforce who may already have some competencies, and need to progress at their own pace. However, this model raises questions with faculty workloads, scheduling, documenting competencies, industry engagement, and delivery methods. Please join us in this synergy meeting to share your experiences with CBE.

### International Partnerships and Collaborations—Defining the Skills

#### Calvert

**Nicole Ernst**, Harrisburg Area Community College, Harrisburg, PA; **Vince DiNoto, Rodney Jackson, Ann Johnson**, GeoTech Center, Kentucky Community & Technical College System, Louisville, KY

Defining the skills and competencies needed by the workforce must also include an understanding of global worker needs. Today's students may work for a regional entity, but that organization may have a global presence. The U.S. student needs to be prepared to compete with workers from other regions, states, and nations to be competitive in the job market and to support their employer organizations. Two methods will be discussed, which include working with international partners.

### ATE Regional Networks Focused on the Future of Work

#### Capitol

**Ann-Claire Anderson, Hope Cotner, Tiffney Gray**, Center for Occupational Research and Development (CORD), Waco, TX

The Preparing Technicians for the Future of Work project has identified critical cross-cutting skill areas needed in the next generation of STEM associate degree programs. As an outgrowth of the project's interdisciplinary regional convenings of educators and employers, we will facilitate regional collaboratives—networks of ATE project and center colleagues, industry leaders, and other stakeholders focused on the future of work. We'd like input on how regional networks can respond to the opportunities and challenges facing colleges as they educate the skilled technical workforce.

## ■ 11:30 AM – 12:30 PM SYNERGY MEETINGS

### **Addressing the Need for Manufacturing Technology Instructors**

#### **Governors**

**Wendy Robicheau, Karen Wosczyzna-Birch**, RCNGM, Connecticut College of Technology, CT

A coalition of stakeholders including the RCNGM, educators, employers, and industry associations in Connecticut came together to develop a plan to address the need for instructors in manufacturing technology programs. Session leaders will discuss partnerships and promising practices for recruiting instructors with experience in the advanced manufacturing industry. Participants will have the opportunity to discuss what has worked for them and challenges they face when recruiting instructors.

## ■ 12:30 – 1:00 PM

### **Box Lunches & Networking**

Box lunches will be available in the Committee room as supplies last. Limited lunch seating is available in the Executive room.

## ■ 12:45 – 3:00 PM

### **ATE Center Directors' Meeting and Lunch**

#### **Palladian**



# Preparing Technicians for the **FUTURE OF WORK**

A National Science Foundation project enabling the ATE Community to collaborate regionally with industry partners, within and across disciplines, on the transformation of associate degree programs to prepare US technicians for the Future of Work



This project is supported by the National Science Foundation under NSF DUE #1839567.



7:45 – 8:45 am

Ambassador Ballroom

## **Table 1. What Do You Want to Know about NSF and ATE?**

Many PIs are new to the National Science Foundation (NSF) and have questions about how NSF operates, how award decisions are made, and how reviewers are chosen. Program directors from the ATE program will be on hand to respond to general questions posed by roundtable attendees.

## **Table 2. Rural and Disadvantaged: What Does It Mean and How Can We Help?**

**Terry Brase**, West Hills Community College, Coalinga, CA

People have different perceptions of disadvantaged areas, typically of rural communities and inner cities. My own experiences in rural Iowa and assisting colleges in rural areas with adapting technology did not prepare me for working in a “real” disadvantaged area. Most people don’t understand the extent and depth of difficulties affecting these areas. This presentation provides examples of disadvantages in rural central California and innovation to provide impact meaningful for communities.

## **Table 3. Future Training Opportunities in Workforce Development Using VR**

**Jeff Bertrand**, Clemson University, Anderson, SC

With the increasing ubiquity of computing technology and decreasing costs, new opportunities are afforded for training the current and future workforce using virtual reality. In this roundtable, we will describe how we integrate virtual reality into our online learning management portal called Educate Workforce. We will highlight examples of our simulations and describe the process for developing them, as well as discuss lessons learned.

## **Table 4. Designing Modular, Stackable Credentials for Academic and Career Success**

**Jeff Turk**, University of North Georgia, Dahlonega, GA

The session will share the University of North Georgia’s Applying Geospatial and Engineering Technology (AGET) project experiences and developments associated with modular and stackable credentials in land surveying and geospatial engineering technology. The project developed and implemented a new Land Surveying Certificate and Associate of Science pathway in Geospatial Engineering Technology containing several tracks with modular and stackable credentialing options for students.

## **Table 5. Lab Activities to Teach Supply Chain Automation**

**Robert Sompolski**, Oakton Community College, Des Plaines, IL

In 2014, the Center for Supply Chain Automation collaborated with EMATE to produce the Introduction to the Automated Warehouse e-text. In 2017, an instructor’s manual was produced to provide supplementary exercises, textbook solutions, and sample syllabi. This roundtable will provide exercises for those instructors who teach this course with a laboratory component. Topics from career awareness, electronics, welding, RFID, PLCs, and workplace soft skills are available for discussion.

## **Table 6. Mentoring to Support New Data Science Career Programs**

**Brianna Roche**, Educational Development Center, Waltham, MA

This roundtable will share information about a new ATE project designed to support the design and launch of new data science career programs at community colleges. The session will review and discuss Tools for Developing a Big Data Pathway V2.0, and new efforts to mentor four colleges as they design and launch their new data programs.

## **Table 7. Geospatial Certifications and Reusable Teaching Resources**

**Vince DiNoto**, GeoTech Center, Kentucky Community & Technical College System, Louisville, KY

Demonstration of the geospatial concept modules being developed by GeoTech Center will be the focus of this open discussion. In addition, the GeoTech center team will discuss the pilot pathway for educator certifications, which will include the launch of the pilot criteria.

## **Table 8. Implementing Disciplinary Content Standards: Challenges and Strategies**

**Marie Hoepfl**, Appalachian State University, Boone, NC

Disciplinary standards are in place for K–12 science, math, and technology. Even as STEM fields revise their content standards, emphasis has been placed on interdisciplinary study to bridge these disciplines. However, educators still struggle to define what “STEM literacy” is and how it can be achieved. Discussion will focus on challenges faced in implementing standards that have cross-cutting concepts and practices (e.g., engineering design), and ways that educators have addressed these challenges.



### **Table 9. Beyond the Evaluation Report: Creating One-Page Reports**

**Emma Leeburg**, Western Michigan University, Kalamazoo, MI

One-page reports are a great way to provide stakeholders with a snapshot of a project's activities and impact. Summarizing key evaluation facts in a format that is easily and quickly digestible engages the busy reader and draws attention to the important details of the project. We will discuss what a one-page report is, why you might want to create one, and how they are different from other reports. Attendees will receive a handout and access to training videos to help them start creating one-page reports.

### **Table 10. Developing STEM Student Learning Outcomes by Engaging Partners**

**Richard Polanin**, Lorain County Community College, Metamora, IL

Weld-Ed has established a consortium of education and industry partners and developed a series of professional development courses. The key to assuring industry acceptance of students is the validation of the education by industry. The session will describe the development STEM SLOs through the partnership with professional societies such as the American Society for Non-Destructive Testing. The roundtable will share specific information about the DACUM process and converting the data into SLOs.

### **Table 11. Strategies and Tools for Successfully Engaging Business and Industry**

**Ann Beheler, Mark Dempsey**, National Convergence Technology Center, Collin College, Frisco, TX

Learn the essentials of the National Convergence Technology Center's (CTC's) proven BILT model that encourages employers to actively co-lead technical programs and steer curriculum toward the skills they need in new hires. The BILT model avoids the pitfalls of a traditional business advisory board by meeting multiple times a year and using a voting system to validate job skills. This roundtable will introduce a new resource: a 16-page toolkit that provides directions for implementing the BILT model.

### **Table 12. Mapping the Landscape for Technician Education through the ATE Program**

**Ashok Agrawal**, American Society for Engineering Education (ASEE), Washington, DC

To fully capture the present capacity and future needs of the engineering-related technician workforce, ASEE proposes to launch a project to collect data on individuals pursuing technician education programs and industry's future needs for such technicians. This breakfast roundtable is being organized to gather input from industry partners and ATE institutions, respectively, on the type of data that should be gathered and how that data may be of value to them.

### **Table 13. Equipping Students with Both Technical and Employability Skills**

**John Chamberlain**, CORD, Waco, TX

Employers admit, "We hire for hard skills, but fire for soft skills." Faculty ask, "How can we add one more thing to our already-full courses?" The Necessary Skills Now Network offers strategies and workshops to help faculty enhance their existing course content with employability skills (ES) in a real-world context. We will share (and hear your) reports of ways to transform an existing curriculum into one that does not miss opportunities to impart ES to students.

### **Table 14. Leveraging Different Grant Opportunities to Achieve Synergistic Goals**

**Thomas Stout**, The SMART Center, Tidewater Community College, Virginia Beach, VA

Don't put all your eggs in one basket. Join a lively discussion about the benefits of pursuing multiple funding opportunities to achieve and enhance industry goals. Learn how your colleagues have successfully navigated managing multiple grants with synergistic goals.

### **Table 15. Increasing Enrollment in Technical Courses**

**Rebecca Zarch**, Sage Fox Consulting Group, Amherst, MA

Enrollments in STEM technician programs at two-year colleges are languishing, leading to courses being curtailed. One cause is the mathematics requirements imposed by the colleges. The purpose of this session is to gather information about technical programs that have made changes, particularly in mathematics preparation, and have increased student enrollments, retention, and placement.

## Table 16. Escaping Gen-Ed Hell: Pathways to IT

**Renee Edwards**, Rutgers University, New Brunswick, NJ;  
**Bill Worden**, Ivy Tech Community College of Indiana, Bloomington, IN

Roundtable moderators will discuss the challenges and benefits to both institutions and students in building research partnerships between community colleges and four-year/graduate universities. They will also discuss how it may help students more clearly be able to reach their education and career goals in STEM fields by highlighting the administrative, social, and technical issues.

## Table 17. Deepen Learning, Maximize Investment, and Stimulate Local Economies

**Abbe Kesterson**, Bluegrass Community and Technical College, Lexington, KY

Contract service, research, and manufacturing organizations—and business incubators—are college/industry partnerships that deepen student learning, maximize infrastructure investment, and stimulate local economies. AC2 surveyed the national biotech education community to better understand how these models are being implemented and managed. Join us to learn about these innovative partnerships and share your experiences with the group.

## Table 18. Envisioning Change: Challenges and Successes of Inquiry-Based Labs

**Bridgette Kirkpatrick**, **Carol Twichell**, Collin College, McKinney, TX

The roundtable moderators have identified that essential learning outcomes mandated by the State of Texas for the first semester freshman majors biology course are no longer being adequately met and are not likely to be met by a traditional “canned” lab. In response to the call to incorporate inquiry-based learning into our course, we have developed a new laboratory approach. Join us to learn about our new approach and discuss ways that you could initiate similar changes at your institution.

## Table 19. NSF’s ITEST Program—Proposal Development Resources

**Joyce Malyn-Smith**, Education Development Center, Waltham, MA

NSF’s ITEST (Innovative Technology Experiences for Students and Teachers) program supports learning opportunities based on the innovative use of technology to strengthen knowledge and interest in STEM and ICT careers. This roundtable will share examples of funded projects and review proposal development resources available from ITEST’s STELAR Center including an online proposal development course, opportunities to host your own regional proposal development workshops, and networking opportunities.

## Table 20. It’s Just You and Not a Marketing Team: Social Media on a Shoestring

**Sandra Porter**, Digital World Biology, Seattle, WA

Are you looking for ways to use social media to highlight your project for your school, community, industry partners, and students? Do you have questions about using Facebook, Instagram, or Twitter for your project? This roundtable will offer examples of how current ATE projects are using these social media formats, and share the nuts and bolts of managing social media.

## Table 21. Community College Cybersecurity Workforce Study

**Corrinne Sande**, CyberWatch West, Whatcom Community College, Bellingham, WA

This roundtable will share the results of a six-month study examining the success of community colleges placing cybersecurity professionals. The study involved 100 students from 12 community colleges. The National Institute for Standards and Technology completed an update to the NICE framework that included the definition of 52 work roles. This study involved identifying the types of jobs community college graduates found after graduation and the alignment of these jobs to the job roles.

7:45 – 8:45 am

Ambassador Ballroom

## Table 1. What Do You Want to Know about NSF and ATE?

Many PIs are new to the National Science Foundation (NSF) and have questions about how NSF operates, how award decisions are made, and how reviewers are chosen. Program directors from the ATE program will be on hand to respond to general questions posed by roundtable attendees.

## Table 2. Developing Curriculum for an Unmanned Aircraft Systems (UAS) Program

**Ken Yanow**, GeoTech Center, Louisville, KY

The GeoTech Center recently conducted a DACUM for the emerging UAS Flight Operations Technician industry. DACUM participants included professionals from a variety of fields that utilize UAS technology. The resulting DACUM led to the crafting of UAS curriculum. This roundtable will discuss the results of the DACUM, and serve as an opportunity to share and discuss the resulting UAS curriculum. Participants are encouraged to discuss and disseminate their own course outlines as well.

## Table 3. Meeting the Educational Needs of the Incumbent Worker

**Nancy Louwagie**, Normandale Community College, Bloomington, MN

Project DELIVER has had an impact on workforce development, using telepresence and an equipment trainer system to offer real-time, hands-on courses to students and workers around the country. Normandale is seeking ways to provide an educational experience tailored to the incumbent worker's prior experience. This roundtable will be an opportunity to discuss developing micro-credential programs as a strategy to better meet the needs of the incumbent workforce.

## Table 4. MNTeSIG—A Model for Special Interest Groups

**Matthias Pleil**, University of New Mexico, Albuquerque, NM

The Support Center for Microsystems Education (SCME) has been collaborating with several micro-nano tech and related projects and centers for many years. Learn how we evolved from an annual face-to-face micro conference in 2011 to a monthly gathering of like-minded members of the Micro-Nano Tech Education Special Interest Group collaboratory. Join our group or learn more to start your own!

## Table 5. Engineering Technology Outreach to K–12

**Ann Laird**, Mohawk Valley Community College, Utica, NY

Successfully building the student pipeline for engineering technology programs requires a multi-prong approach. Increasing awareness of programs is critical to increase the pipeline and this can be done through different types of outreach efforts that will be discussed, such as providing secondary and middle school teacher professional development opportunities, creating beneficial outreach partnerships, and providing the right information to parents of future students.

## Table 6. Digital Forensics and Incident Response Activities for MS–HS Girls

**Tobi West**, Coastline College, Garden Grove, CA

Middle school and high school girls are often looking for opportunities to learn about new and intriguing professions. Building the future cybersecurity workforce is imperative to maintain the security of our national infrastructure. Workshop activities related to digital forensics and incident response introduced at Coastline College's summer camp along with outcomes from the camp will be discussed. Your suggestions and recommendations are welcome in the conversation.

## Table 7. Youth Engagement: Successful Introduction of Career Pathways

**Sandra Weber**, The SMART Center, Tidewater Community College, Virginia Beach, VA

Learn how to engage students in your pathways before they reach college with a discussion about successful youth initiatives to engage students with industry. The focus of this roundtable will be to share different and innovative youth programs from across the country and explore topics such as developing learning objectives, marketing, getting industry involved, and best funding strategies.

## Table 8. Defining and Measuring EDI: The Road to a Diversified STEM Workforce

**Ayesha Boyce**, University of North Carolina Greensboro, Greensboro, NC

NSF is committed to broadening participation in STEM and is particularly focused on equity, diversity, and inclusion (EDI). This project examines how and in what ways ATE PIs and evaluators define EDI within their projects. Findings from surveys conducted will be shared and discussed to explore strategic ways for collecting reliable and meaningful data around this topic. Attendees will leave the session with new ideas and strategies to employ in attending to EDI in their STEM programs.

## Table 9. Evaluation Use: Sharing Stories of How Evaluation is Being Used in ATE

**Michael Harnar**, Western Michigan University, Kalamazoo, MI

ATE grantees spend on average 8 percent of their grant budgets on evaluation, almost \$5 million annually. To understand how this commitment is affecting change, EvaluATE is studying ATE evaluation use. We will share what we've learned from the recent PI survey; and we want PIs to share how evaluation has informed their program. We hope this intersection will deepen our understanding of evaluation use and provide examples from which others can learn. Please come share your stories and hear what we've learned.

## Table 10. Meaningful Industry Engagement for High-Tech Programs

**Brianna Rockenstire**, Lake Washington Institute of Technology, Kirkland, WA

This roundtable will discuss best practices, challenges, and successes of community and technical college engagement with the technology industry. Attendees are invited to share their insights in an interactive conversation about improving industry partnerships for student success.

## Table 11. Challenges and Solutions Unique to the Rural College Environment

**Anita Grierson**, Science Foundation Arizona, Arizona State University, Scottsdale, AZ

The Rural Arizona Contextualized Math Alliance program is based on a mutual recognition that math is a significant barrier to technician degree completion in rural Arizona. While this problem is not unique, the collective approach is unique in its ability to address resource limitations at these rural colleges. This breakfast session invites those representing rural colleges across the country to sit together and discuss similar problems and/or solutions unique to rural environments.

## Table 12. Mapping the Landscape for Technician Education through the ATE Program

**Ashok Agrawal**, American Society for Engineering Education, Washington, DC

To fully capture the present capacity and future needs of the engineering-related technician workforce, ASEE proposes to launch a project to collect data on individuals pursuing technician education programs and industry's future needs for such technicians. This breakfast roundtable is being organized to gather input from industry partners and ATE institutions, respectively, on the type of data that should be gathered and how that data may be of value to them.

### **Table 13. Growing Agriculture Education at a Rural Community College through NSF ATE**

**Jay Olsen**, Snow College, Ephraim, UT

Snow College built their agriculture program on the cornerstones of rural roots, industry, vision, and strategic funding. The roundtable moderator will share Snow College's success of re-building an agriculture program, from 15 students in 2011 to over 150 students in 2019. Snow College's ATE grant played a cementing role in adding agriculture technology/mechanics (now precision agriculture) to the agriculture program's degree and class offerings.

### **Table 14. Teaching the Fundamentals of Computer Vision and Deep Learning**

**Debasis Bhattacharya**, University of Hawaii, Kahului, HI

This roundtable discusses the growth of artificial intelligence and machine learning and their implications to cybersecurity and privacy. As the processing power of specialized hardware increases, artificial intelligence and machine learning capabilities can be embedded in portable and mobile devices such as drones, robots, and other IoT devices. There is a need to understand the technology behind these embedded devices and the privacy and security risks and concerns.

### **Table 15. Integrated Efforts for Promoting Broader Impacts in the NSF ATE Community**

**Kevin Niemi**, ARIS Center, University of Wisconsin—Madison, Madison, WI; **Tom Tubon**, Madison College, Madison, WI

The NSF ARIS Center advances the rigor, relevance, and practice of broader impacts (BI) by (a) cultivating the existent and emerging BI expert community; (b) building capacity of stakeholders to enhance the broader impacts of their work; and (c) creating infrastructure able to adapt to stakeholder needs as BI continues to evolve. ARIS provides opportunities to integrate efforts for BI into NSF ATE projects to increase public understanding and meet the growing demand for BI training.

### **Table 16. Mastering Industry Partnerships: An Invitation to Collaborate**

**Mary Slowinski**, Bellevue College, Bellevue, WA

The Working Partners Research Project has been capturing the ATE community's core practices and key factors for successful industry partnerships since 2015. Results include community-vetted partnership models, mini case studies, and an online toolkit. The Engaging Educators/Strengthening Practice project will utilize this research to develop educator workshops and support for initiating and sustaining successful industry partnerships. Come share your wants and needs so we can best serve you.

### **Table 17. COMPASS: Developing and Implementing a Vigorous Cybersecurity Curriculum**

**Diego Tibaquira**, Miami Dade College, Miami, FL

Miami Dade College is the largest and leading degree granting institution for minorities. COMPASS provides faculty training to develop hands-on cybersecurity education and utilizes the state-of-the-art Cybersecurity Center of the Americas. This roundtable will discuss building collaborations with Miami Dade County Public Schools to improve teacher's cyber-skills; establishing a pipeline boot camp to dual enrollment to college for cybersecurity pathways; and mapping courses in the curriculum to industry certifications.

### **Table 18. Needed Math**

**Michael Hacker**, Hofstra University, Albany, NY

Building upon the findings and recommendations of the ATE-funded Needed Math Conference ([www.neededmath.org](http://www.neededmath.org)) held in 2018, this roundtable invites technician educators who have worked with industrialists to offer advice about the mathematical concepts, skills, and processes needed by STEM technicians. It will inform the establishment of regional working groups to reform mathematics instruction in technician education programs to emphasize the mathematics needed in the workplace.

**Table 19. Building Teamwork Using Project-Based Learning and Presentations**

**Kyriakos Ioannou, Stephen Leone**, Westchester Community College, Valhalla, NY

This roundtable will discuss how we build a group project, prepare a presentation, and present the project to the class. This technique helps students learn the concepts, builds bonds between students, and teaches them the soft skills needed for employment. A sample project using an arduino platform will be used to demonstrate the mechanical, electrical, and civil technology skills needed. We will share how students become engaged in the subject matter.

**Table 20. Planning and Building Your STEM Courses for Scalability and Impact**

**Eric Wooldridge**, Somerset Community College, Somerset, KY

This roundtable will share the techniques and practices applied by Somerset Community College in developing their new advanced manufacturing courses to be efficiently and quickly scaled statewide utilizing partnerships with other community colleges and dual-credit sponsoring high schools. Strategies for addressing accrediting issues, continuous curriculum replication and updating, facilitator training, conflicting LMS platforms, recruiting, and other topics will be discussed.

**Table 21. A Look at Findings from the 2019 ATE Survey**

**Lyssa Becho**, EvaluATE, Western Michigan University, Kalamazoo, MI

The annual survey of ATE PIs gathers data about the achievements of ATE projects and centers. The survey went through a revision in 2018–19 to better reflect the current state of the program. In this session, we will discuss this revision process and present the 2019 findings, including the major activities ATE projects engaged in, students and educators served, and new programs developed. Audience members will have a chance to comment on the results, ask questions, and suggest follow-up analyses.

# PLENARY SPEAKERS

## October 23 – Opening Plenary Session



**Mary E. Heiss** is Senior Vice President for Academic and Student Affairs for the American Association of Community Colleges (AACC) and a member of AACC's executive leadership team. Among her responsibilities, Heiss oversees the advancement of professional development programming for community college leaders; AACC's

activities with the National Science Foundation through the Advanced Technological Education (ATE) program; strategies to advance diversity, inclusion and equity within community colleges; and international programs and services.

Heiss staffs AACC's Committee on Program Initiatives and Workforce Training and Commission on Student Success. She also serves as AACC's liaison to the Instructional Technology Council. She is an ex-officio member of The National Academies of Sciences, Engineering, and Medicine's Roundtable on Systemic Change in Undergraduate STEM Education. She is also a member of the National Visiting Committee for the Nano-Link Center for Nanotechnology Education.

Prior to joining AACC in 2006, Heiss worked for two other nonprofit organizations in Washington, DC. Earlier, she held increasingly responsible positions in the information technology and telecommunications industries for over 15 years. She is a graduate of Michigan State University and attended St. Clair County Community College (MI).



**Karen Marrongelle** is the Assistant Director of the National Science Foundation's (NSF's) Directorate for Education and Human Resources (EHR). She leads the EHR directorate in supporting research that enhances learning and teaching to achieve excellence in U.S. science, technology, engineering, and mathematics (STEM) education. Prior to joining NSF,

Marrongelle was dean of the College of Liberal Arts and Sciences at Portland State University and professor of Mathematics and Statistics, where she oversaw 24 departments and programs across the humanities, social sciences, and natural sciences. In addition to her work as dean, Marrongelle has served as a faculty member in the Department of Mathematics and Statistics at Portland State University since 2001. Prior to her appointment as dean, she held positions as the vice chancellor for academic strategies and assistant vice chancellor for academic standards and collaboration with the Oregon University System. From 2007 to 2009, Marrongelle served on a rotation as a program officer at NSF and led numerous grants, collaborating with researchers nationally and internationally to improve undergraduate mathematics education and K-12 mathematics professional development. Marrongelle has a bachelor's degree in mathematics and philosophy from Albright College, a master's degree in mathematics from Lehigh University, and a doctorate in mathematics education from the University of New Hampshire.

# PLENARY SPEAKERS

## October 23 – Opening Plenary Session



**Victor R. McCrary** is the Vice President for Research and Graduate Programs at the University of the District of Columbia. Prior to this position, he was Vice Chancellor for Research at the University of Tennessee, Knoxville, and before that the first Vice President for Research and Economic Development at Morgan State University, Baltimore, MD.

Previously, he was the Business Area Executive for Science and Technology at the Johns Hopkins University Applied Physics Laboratory (APL), where he directed investments totaling over \$60M for basic and applied research projects targeted for national security and space applications. In 2005, McCrary was selected to the rank of Principal Professional Staff at the Johns Hopkins University Applied Physics Laboratory. He is a former national president of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE), and a Fellow of the American Chemical Society.

McCrary serves on numerous committees including: The Intelligence Science and Technology Experts Group of the National Academies of Sciences, Engineering, and Medicine; the advisory board for electrical and computer engineering at The Citadel, and the advisory board of the Applied Research Laboratory at Penn State. He served on the subcommittee for the U.S. Air Force Institute of Technology (AFIT) the board of the Maryland Innovation Initiative of the Maryland Technology Development Corporation (TEDCO); and the PubMed Central National Advisory Committee for the National Institutes of Health.

He has authored or co-authored over 60 technical papers and co-edited two books in his career at AT&T Bell Laboratories and the National Institute of Standards and Technology (NIST). He has received a number of honors and awards during his career. In 2011, he was honored as Scientist of the Year by the Annual Black Engineer of the Year Award-STEM Conference. In 2015 he received the Alumni Award for Research Excellence from the Catholic University of America, and Distinguished Alumni Award by Howard University in 2017.

McCrary was appointed by President Barack Obama to the National Science Board, which oversees the National Science Foundation, in October 2016.



**Paul Osterman** is the Nanyang Technological University (NTU) Professor of Human Resources and Management at the Massachusetts Institute of Technology (MIT) Sloan School of Management as well as a member of the Department of Urban Planning at MIT. From July 2003 to June 2007 he also served as deputy dean at the MIT Sloan School.

His research concerns changes in work organization within companies, career patterns and processes within firms, economic development, urban poverty, and public policy surrounding skills training and employment programs.

Osterman has been a senior administrator of job training programs for the Commonwealth of Massachusetts and has consulted widely for government agencies, foundations, community groups, firms, and public interest organizations.

His most recent book is *Who Will Care For Us: Long Term Care and the Long Term Workforce* (Russell Sage, 2017). Other books include *Good Jobs America: Making Work Better for Everyone* (Russell Sage, 2011); *The Truth About Middle Managers: Who They Are, How They Work, How They Matter* (Harvard Business School Press, 2009); *Gathering Power: The Future of Progressive Politics in America* (Beacon Press, 2003); *Securing Prosperity: The American Labor Market: How It Has Changed and What to Do About It* (Princeton University Press, 1999), and *Working In America: A Blueprint for the New Labor Market* (MIT Press, 2001).

Osterman is also the author of *Employment Futures: Reorganization, Dislocation, and Public Policy*; *Getting Started: The Youth Labor Market*; *The Mutual Gains Enterprise: Forging a Winning Partnership Among Labor, Management, and Government*; and *Change At Work*. He is the editor of two books, *Internal Labor Markets and Broken Ladders: Managerial Careers in the New Economy*. In addition, he has written numerous academic journal articles and policy issue papers on topics such as labor market policy, the organization of work within firms, careers, job training programs, economic development, and anti-poverty programs.



## October 25 – Friday Plenary Session



**Charles Fadel** is a global education thought leader and futurist, author, and inventor, with several active affiliations. His work spans the continuum of schools, higher education, and workforce development/lifelong learning as the founder and chairman of the Center for Curriculum Redesign (Boston, Massachusetts), focused on “Making Education More Relevant”

and answering the question: “What should students learn for the 21st century in an age of Artificial Intelligence?” He is also the founder and president of the Fondation Helvetica Educatio (Geneva, Switzerland); Project Director at Harvard’s Graduate School of Education in the Laboratory for the Science of the Individual exploring “Machine Learning + Human Learning,” and a member of the President’s Council of the Franklin W. Olin College of Engineering.

Through his 25-year high-tech career, he has witnessed firsthand the disruptive effects of exponential change, which gives him a unique perspective he brings to the world of education. Among his past affiliations he served as the Global Education Lead at Cisco Systems; in product marketing and management roles in semiconductors for broadband and wireless applications at Analog Devices and M/A-COM; and as founder of Neurodyne AI, an ahead-of-its-time startup focused on neural networks and artificial intelligence.

Fadel has served as a keynote/presenter at private, national, and international events for organizations as varied as the World Economic Forum, UNESCO, World Bank, OECD, Google TechTalk, and the Bill and Melinda Gates Foundation. His most recent, groundbreaking book, *Artificial Intelligence in Education* has just been published. His former, highly influential book, *Four-Dimensional Education*, has been translated in 10 languages. He is also the co-author of the best-selling book, *21st Century Skills*. He holds a BSEE, an MBA, and seven patents.



**Robin Wright** currently serves as Director of the Division for Undergraduate Education of the National Science Foundation. She is at NSF on a temporary assignment from the University of Minnesota’s Department of Biology Teaching and Learning, for which she was the founding head. She previously served as Associate Dean for Faculty and Academic Affairs in the College of Biological Sciences and as professor of Genetics, Cell Biology, and Development.

Prior to focusing exclusively on undergraduate education research and development, her lab used genetic, cell biological, ecological, and evolutionary approaches to explore cold adaptation, using baker’s yeast as a model organism. Her laboratory was known as a great place for undergraduates to pursue research and she has mentored nearly 100 undergraduate researchers over the past 27 years. At University of Minnesota, she helped to develop and co-teaches the Nature of Life orientation program and has been a leader in development of Foundations of Biology, an innovative, team-based introductory biology course for biological sciences majors. She has led HHMI- and NSF-supported initiatives to deliver discovery-based research experience to the thousands of majors and non-majors who take biology classes in the College of Biological Sciences each year.

Wright served on the Education Committee of the American Society for Cell Biology and as chair of the Education Committee for the Genetics Society of America. She was a senior editor of *Life Science Education*, and is the founding editor-in-chief of a new biology curriculum journal called *CourseSource*. She was a member of the Executive Committee for the HHMI/National Academies of Sciences-sponsored Summer Institute on Biology Education and the National Academies Scientific Teaching Alliance. During this work, she was named as a National Academies Biology Education Mentor for 14 consecutive years. She was elected as a fellow of the American Association for the Advancement of Science and received the Elizabeth Jones Award for Excellence in Undergraduate Education from the Genetics Society of America.

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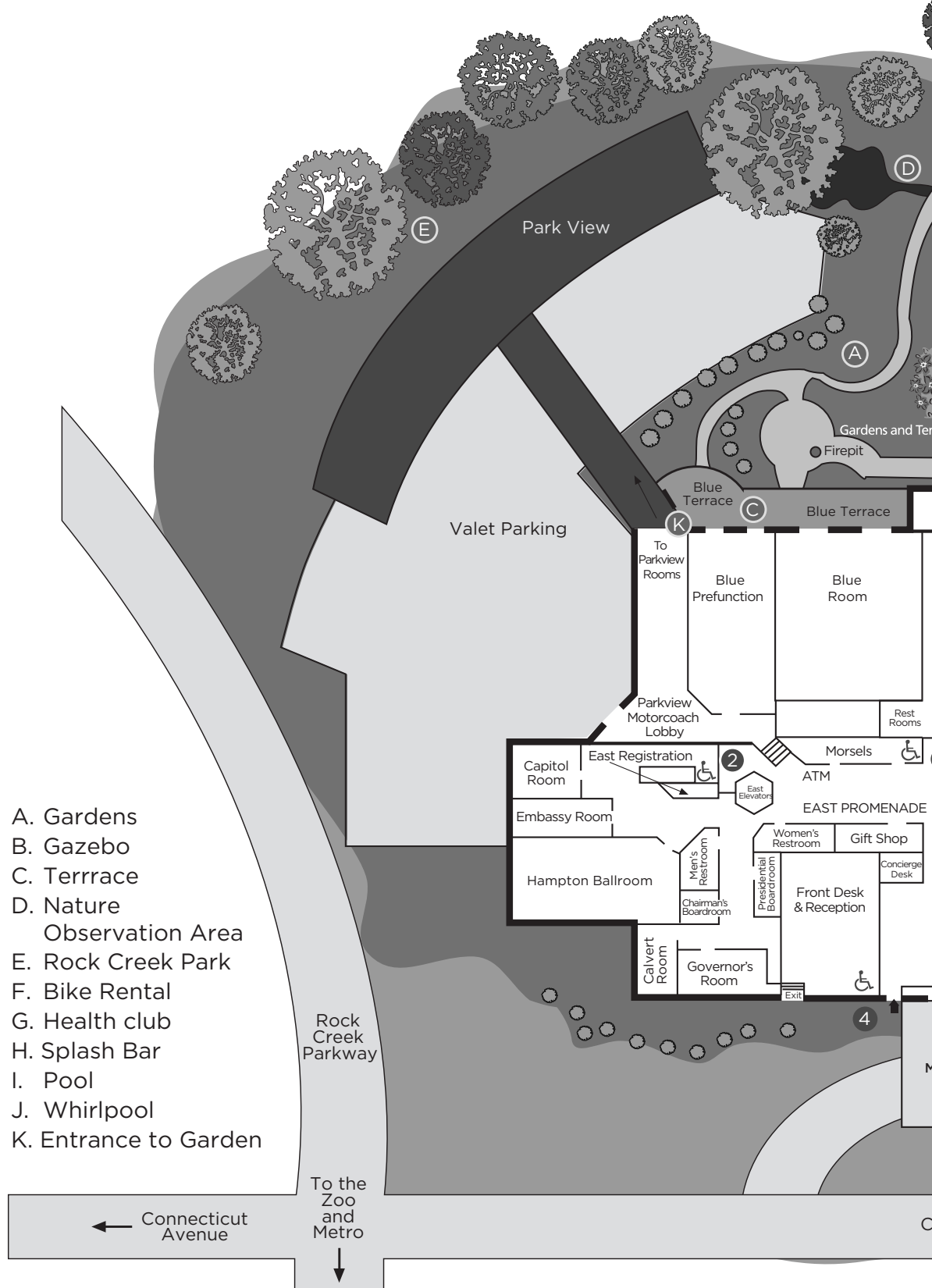


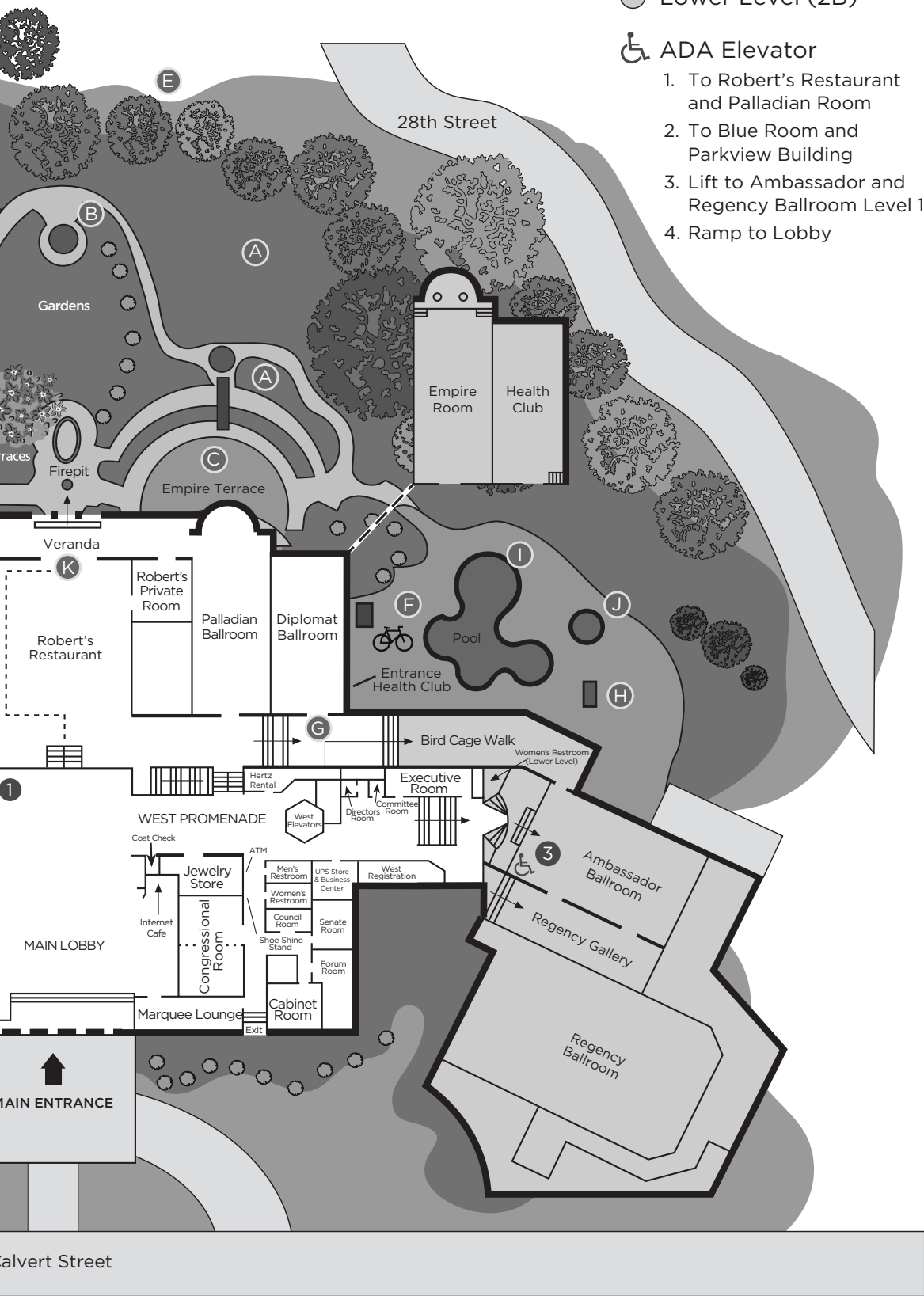
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# OMNI SHOREHAM HOTEL MAP

OMNI  HOTELS & RESORTS  
shoreham | washington dc





○ Lobby Level

● Lower Level (2B)

♿ ADA Elevator

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2. To Blue Room and Parkview Building
3. Lift to Ambassador and Regency Ballroom Level 1B
4. Ramp to Lobby

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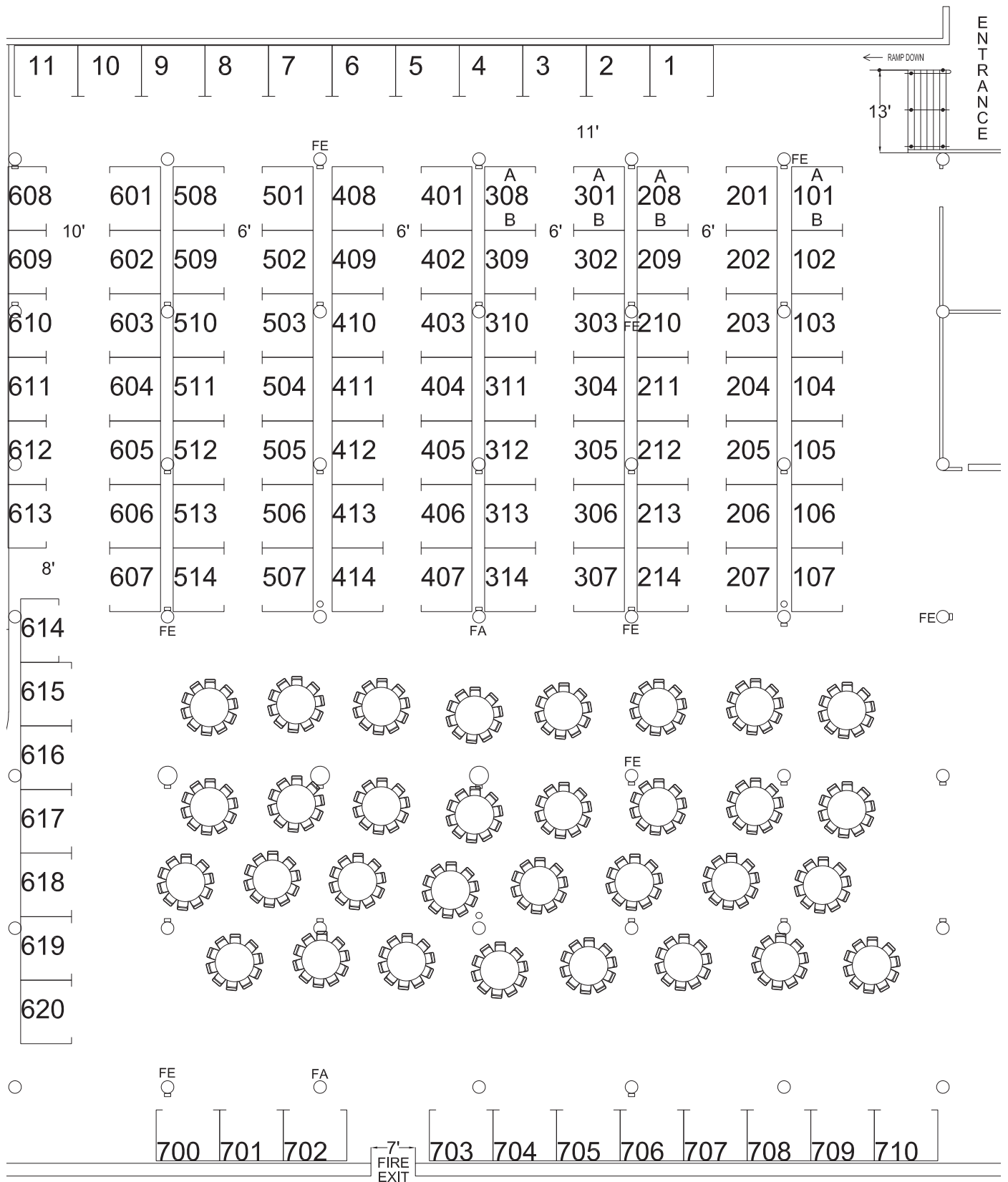


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# SHOWCASE I: ATE CENTERS AND PROJECTS

## SHOWCASE MAP WEDNESDAY • OCTOBER 23, 2019



## ATE Centers and Projects

7:00 – 9:15 pm • Exhibit Hall

Booth #	Alpha by Institution
615	Austin Community College Austin Community College Bio-Link Regional ATE Center for Biotechnology and Life Sciences and InnovATEBIO National Biotechnology Center
208B	Arapahoe Community College A Community College and Industry Partnership to Produce a Highly Qualified Cybersecurity Workforce
305	Bridgerland Technical College Scaling Up Utah's Automated Manufacturing Technician Pipeline
406	Bucks County Community College Increasing the Number of Workforce-Ready Engineering Technicians in Southeastern Pennsylvania
106	Cape Fear Community College CT-EnTICE: Chemical Technology – Enrolling Technicians and Improving Community Engagement
509	Central Carolina Community College Technician Training in Advanced Building Performance Analysis and Verification
701	Central Community College Mechatronics with Instrumentation and Controls (MwIC)
605	Central Oregon Community College Northwest Engineering and Vehicle Technology Exchange (NEVTEX)
308A	Central Virginia Community College Improving Mechatronics Technician Training for the Advanced Manufacturing Industry
404	Chippewa Valley Technical College Smart Manufacturing and Resources for Transforming the Future (SMART FUTURE) Robotics Training in Education and Advanced Manufacturing Sectors (Robo TEAMS) Technological Education, Advancement, and Change in Cyber-Physical Systems Education (TEACH CPS-ED)
612	City College of San Francisco Collaborative Research – Collaborative Approach to Work-Based Learning: Addressing the Needs of Community College Biotechnology Students and Their Research University Mentors
011	Clark State Community College Cyber Pro: Developing Rigorous and Enhanced Academic Modules
312	Clemson University A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual and Augmented Reality-Based Technology Innovations in Technician Education

Booth #	Alpha by Institution
101A	College of Southern Maryland Cybersecurity Workforce: Bridging the Gap
609	Collin County Community College Information Technology Skill Standards, 2020 and Beyond
610	Collin County Community College National Convergence Technology Center (CTC)
210	Columbus State Community College Building an Industry-Aligned Pathway to Careers in Cloud Computing
502	Columbus State Community College Collaboration of Midwest Professionals for Logistics Engineering Technology Education Project
211	Columbus State Community College Data Analytics Technician Advancement (DATA) Program
510	Columbus State Community College Design Thinking: Additive Manufacturing Summer Institute
209	Columbus State Community College Information Technology Career Pathways through a Flexible Apprenticeship Model
501	Columbus State Community College Logistics Engineering Technology Work Study
511	Columbus State Community College Manufacturing Experiential Advancement Readiness Network Project
504	Columbus State Community College Pathways for Alternative Energy Automotive Technicians
203	Columbus State Community College Strengthening Mobile Application Resources and Technician Training: The SMARTT Project
005	CORD ATE 2.0: Preparing Technicians for the Future of Work
004	CORD HI-TEC – High Impact Technology Exchange Conference
006	Cuesta College GIS Technology: Mapping, Data Management and Work-Based Learning Across Industry Sectors
702	CUNY Borough of Manhattan Community College A Simulation-Based Curriculum to Accelerate Math Remediation and Improve Degree Completion for STEM Majors
614	Digital World Biology A Bridge to Bio-Link's Future



Booth #	Alpha by Institution
607	Eastern Florida State College SpaceTEC Renewal – National Resource Center
214	Edmonds Community College National Resource Center for Materials Technology Education (MatEdU)
003	Florence-Darlington Technical College Mentor-Connect – Leadership Development and Outreach for ATE
508	Florence-Darlington Technical College, Science Foundation Arizona Collaborative Research: HSI ATE Hub– Diversifying the ATE Program with Hispanic Serving Institutions Using Culturally Inclusive Mentoring and ATE Resources
700	Florida State College at Jacksonville Meeting Industry Needs through a Two-Year Data Science Technician Education Program
503	Florida State University Assessing Educational Pathways for Manufacturing in Rural Communities: An Investigation of New and Existing Programs in Northwest Florida
617	Forsyth Technical Community College Biosciences Industry Fellowship Project
301B	Gateway Technical College Advancing Manufacturing through Integration of Information Technology
405	Grayson College Boosting New Careers in Advanced Manufacturing Industries
107	Hillsborough Community College FLATE: Florida’s Advanced Technological Education Center of Excellence
507	Indian Hills Community College Developing Photonics Education in Iowa’s Rural Secondary Schools
513	Indian River State College Center for Laser and Fiber Optics Education
514	Indian River State College Regional Center for Nuclear Education and Training (RCNET)
307	Itasca Community College Development of a 21st Century Industrial Process Operations Program
101B	Johnston Community College Integrating Biotechnology and Applied Engineering to Meet Emerging Advanced Technological Workforce Needs
302	Kentucky Community & Technical College System Geospatial Technology Center of Excellence: Growing the Workforce
709	Kentucky Community & Technical College System Mobile Additive Manufacturing Platform for 21st Century STEM Workforce Enhancement

Booth #	Alpha by Institution
706	Klamath Community College Rural Internship Program
505	Lane Community College Independent Learner Energy Education Design Project
010	Lorain County Community College Expanding the National Center for Welding Education
611	Madison Area Technical College Building New Pathways to Biotechnology Technician Careers
506	Madison Area Technical College Center for Renewable Energy Advanced Technological Education Support Center (CREATE-SC)
616	Madison Area Technical College Consortium for Advanced Manufacturing of Cell and Tissue-Based Products
007	Madison Area Technical College Scaling Implementation of Stem Cell Technical Education: A Collaborative Project
409	Metropolitan Community College Advanced Technological Education in the Intelligent Infrastructure for the Industrial Internet- of-Things
604	Miami Dade College Cybersecurity Opportunities and Methods that Promote Access and Student Success
704	Miami Dade College Dade Enterprise Cloud Computing Initiative (DECCI)
412	Missouri State University VESTA National Center of Excellence
707	Montgomery County Community College NBC2: Building Regional and National Networks for a 21st Century Workforce for the Bioeconomy
206	Moraine Valley Community College Center for Systems Security and Information Assurance (CSSIA)
205	Moraine Valley Community College The Internet of Things Coordination Network
208A	Morgan Community College Industrial Controls and Telematics Across Disciplines
606	Motlow State Community College Smart Manufacturing for America’s Revolutionizing Technological Transformation (SMARTT)
008	National Alliance for Partnerships in Equity (NAPE) Educator’s Equity in STEM II
601	New Jersey Institute of Technology Renewable Energy Systems Training (REST) Laboratory Development and Workforce Training

Booth #	Alpha by Institution
512	North Arkansas College Effectively Delivering Networking and Cybersecurity Education in a Rural Environment
710	North Central State College Project-Based Learning Across Engineering Technology Curriculum
618	North Dakota State College of Science North Dakota Welds (NDWelds) Program: Advancing Welding Technician Skills for Students and Training for Educators
102	Northeast Community College Developing a Precision Agriculture Workforce Ladder through Secondary, College, and Incumbent Worker Education that Integrates Emerging Technologies and Farm Data
620	Northeast Iowa Community College Northeast Iowa Advanced Manufacturing Technicians
708	Northland Community and Technical College National Center for Autonomous Technologies (NCAT)
402	Northwestern Connecticut Community College Engaging Students from Classrooms and Camps to College and Advanced Technological Careers
619	Norwalk Community College Recruitment and Retention of Women in Engineering and Engineering Technology
202	Owensboro Community & Technical College Advancing Female Incumbent Workers in the Manufacturing Industry
212	Palm Beach State College Computer Outreach for Diverse Education (CODE)
201	Palo Alto College Leveraging Supply Chain and Logistics Emerging Technologies to Serve Industry Needs
309	Parkland College Precision Agriculture Curriculum Enhancement
408	Patrick Henry Community College Innovate, Design, Engineer, and Accelerate Career Pathway
104	Pellissippi State Community College Water/Wastewater Certified Operator Education Project
311	Pennsylvania State University, University Park The Nanotechnology Applications and Career Knowledge (NACK) Support Center Nanotechnology Professional Development Partnership: A Web-Based, Live-Streaming Approach for Optimizing Impact, Effectiveness, and Cost

Booth #	Alpha by Institution
301A	Phillips Community College of the University of Arkansas Arkansas Delta Information Systems and Cyber Technician Education Initiative
308B	Portland Community College Enhancing Geographic Information Science Technology Education (eGIST)
413	Prince George's Community College National CyberWatch Center
009	Reedley College Developing 2+2+2 Pathways in Agribusiness to Meet the Needs of California's Agriculture Industry
411	Rochester Institute of Technology DeafTEC Resource Center
213	Rochester Institute of Technology RoadMAPPs to Careers: A New Approach to Mobile Apps Education Featuring a Mapp for Deaf and Hard-of-Hearing Students
603	Rose State College Collaborative Research: Unmanned Aerial Systems and Specialized Workforce Development to Support Oklahoman Agriculture and Industry
705	Rowan College at Burlington County Comprehensive Integration of Advanced Manufacturing Competencies throughout an Associate's Degree and a Stackable Certificate Curricula
407	Shoreline Community College Clean Tech ATE: Advancing Technician Training in Clean Energy Technology
207	Sinclair Community College The STEM Guitar Project
303	Spartanburg Community College Working with Industry to Incorporate Cybersecurity into Networking Programs
410	St. Charles Community College Educating Agriculture Technicians
306	St. Petersburg College Biomedical Engineering Technology – Pathways to Medical Device Manufacturing, Networking, and Cybersecurity
403	SUNY Polytechnic Institute ATE Regional Center for Semiconductor and Nanotechnology Education (NEATEC)
314	Tennessee Technological University AM-WATCH: Additive Manufacturing – Workforce Advancement Training Coalition and Hub
602	Texas A&M Engineering Experiment Station Collaborative Research: Providing an Adaptive Learning Environment for the Acquisition of High Value Manufacturing Skills

Booth #	Alpha by Institution
401	Texas A&M Engineering Experiment Station Educating the Workforce in Cyber and Smart Manufacturing for Industry 4.0
703	Thaddeus Stevens College of Technology Skilled Women Get STEM Jobs: Recruiting and Engaging Female Students
304	Trident Technical College Creating Learning Opportunities for Undergraduates in Developing Technologies (CLOUDTech)
204	Tunxis Community College Regional Center for Next Generation Manufacturing (RCNGM)
608	University of Arkansas Opening Pathways to Employment through Nontraditional Geospatial Applications in Technical Education (OPEN-GATE)
310	University of New Mexico SCME: Scaling Microsystems Support
001	University of Wisconsin–Madison ATE Central
313	University of Wisconsin–Madison Working Partners: Documenting the Impact of Industry Collaboration within the ATE Community
103	Valencia College Broadening Education, Access, and Momentum (BEAM) in Energy Management and Controls Technology
414	Wake Technical Community College Robotics Awake: Promoting the Diffusion of Innovation through Curriculum Development and a Technician Training Community College Extension Model
002	Western Michigan University EvaluATE – Evaluation Resource Center for Advanced Technological Education
613	West Hills Community College Welding Education Long-Distance Community Outreach
105	Whatcom Community College Expansion of the CyberWatch West Resource Center

# SHOWCASE SESSION I – ABSTRACTS

Wednesday, October 23

ATE Centers and Projects

7:00 – 9:15 pm • Exhibit Hall

## Booth # 001

**University of Wisconsin–Madison**  
*ATE Central*

ATE Central provides services, tools, and an online portal that support, amplify, and highlight the impacts of the ATE community and showcase the valuable curricula, resources, events, websites, and media created by ATE grantees. It also includes a resource archive and comprehensive database of project and center information that encourages use of ATE resources and promotes sustainability of project and center deliverables.

## Booth # 002

**Western Michigan University**  
*EvaluATE – Evaluation Resource Center for Advanced Technological Education*

EvaluATE is the evaluation support center for the National Science Foundation's Advanced Technological Education (ATE) program. We educate the ATE community's evaluators, project leaders and staff, grant specialists, and college administrators about all things evaluation. All of our resources, webinars, newsletters, blogs, and information about the ATE annual survey can be accessed on our website, [evalu-ate.org](http://evalu-ate.org), and all resources are open-access.

## Booth # 003

**Florence Darlington Technical College**  
*Mentor-Connect – Leadership Development and Outreach for ATE*

Mentor-Connect is designed to fill a void for the ATE program; address the fact that there are those in the nation's community colleges who have never been awarded funding from the NSF ATE program; diversify the ATE program overall; better manage a rapidly growing number of requests received by program officers related to grant proposal development and project management; and develop grant writing skills among STEM faculty who lack sufficient grant personnel at their institutions.

## Booth # 004

**CORD**  
*HI-TEC – High Impact Technology Exchange Conference*

HI-TEC is a national conference on advanced technological education where technical educators, counselors, industry professionals, and technicians can update their knowledge and skills. Charged with educating America's technical workforce, the event focuses on the preparation needed by the existing and future workforce for companies in the high-tech sectors that drive our nation's economy. HI-TEC uniquely explores the convergence of scientific disciplines and advanced technologies. Join us July 27-30 in Portland, OR for HI-TEC 2020.

## Booth # 005

**CORD**  
*ATE 2.0: Preparing Technicians for the Future of Work*

Preparing Technicians for the Future of Work is an initiative designed to facilitate regional collaborations between industry partners and community college educators, within and across disciplines, that will result in transformative changes in associate degree programs to better prepare U.S. technicians for the future workplace. Stop by our booth and learn about upcoming collaboration opportunities. Check out our monthly podcasts, blog series, and more at [www.preparingtechnicians.org](http://www.preparingtechnicians.org).

## Booth # 006

**Cuesta College**  
*GIS Technology: Mapping, Data Management, and Work-Based Learning Across Industry Sectors*

This grant funds efforts to meet the high-demand workforce needs for geographic information system (GIS) technicians. GIS expertise is needed in many disciplines for spatial data management and mapping. A GIS Analyst certificate available through Cuesta College will include project-based and work-based learning designed to motivate students to enroll in specialized GIS courses for the certificate. The certificate will reach those in both academia and in the workforce to learn GIS skills to pursue a new job or advance in a career.

### **Booth # 007**

#### **Madison Area Technical College** *Scaling Implementation of Stem Cell Technical Education: A Collaborative Project*

This project targets workforce competencies and provides a unique opportunity for students to learn, hands-on, how to maintain human pluripotent stem cells in the BSL2 regulated lab. The program has a lecture series where selected scientific articles are discussed and topics including signaling pathways, media formulation, and emerging therapeutics are examined. In the laboratory section of the class, critical core competencies in culturing human cells are addressed such as sterile technique, cell passaging, culture media formulation, 3-germ layer analysis, cryopreservation, and immunocytochemistry.

### **Booth # 008**

#### **National Alliance for Partnerships in Equity (NAPE)** *Educator's Equity in STEM II*

Over the past two years, NAPE has delivered two cohorts of its Micromessaging Academy to 92 STEM CTE instructors and secondary partners from 15 community and technical colleges in 11 different states to build STEM CTE educators' capacity to create an equitable learning environment where women, students of color, and students with disabilities can be successful. Participants increased their attitudes/ perceptions, knowledge/skills, and classroom behavior in creating an equitable learning environment. Learn about the project and its outcomes.

### **Booth # 009**

#### **Reedley College** *Developing 2+2+2 Pathways in Agribusiness to Meet the Needs of California's Agriculture Industry*

The project will create seamless 2+2+2 pathways from high school to two-year community college and four-year institutions for students interested in pursuing education in agriculture business and related fields. Students will work towards a certificate, AS degree, and/ or transfer to four-year colleges and universities. High school students will be able to take college-level classes through dual enrollment. The project also offers an intensive two-week summer academy in agriculture sciences and technology. The program exposes students to educational and career opportunities in agriculture. The project will focus on improved student retention, success, and completion rates.

### **Booth # 010**

#### **Lorain County Community College** *Expanding the National Center for Welding Education*

Weld-Ed is the National Center for Welding Education and a National Resource Center of Excellence specializing in faculty professional development, program improvement, and occupational demand reporting for community colleges interested in starting or expanding their welding technology offerings.

### **Booth # 011**

#### **Clark State Community College** *Cyber Pro: Developing Rigorous and Enhanced Academic Modules*

Clark State Community College is working with high schools to engage students in considering cybersecurity careers. The project is leading the development of approximately 30 hands-on cybersecurity laboratory modules that are specifically designed for delivery within a high school classroom environment. Project teams consisting of college faculty and students and high school teachers and students will design, develop, and test the modules. The lab modules will cover entry-level cybersecurity knowledge and skills that map to in-demand industry certifications. The modules will also be mapped to the NICE Cybersecurity Workforce Framework.

### **Booth # 101A**

#### **College of Southern Maryland** *Cybersecurity Workforce: Bridging the Gap*

This project offers a roadmap that aligns perfectly with the strategic plans of Charles County, St. Mary's County, the State of Maryland, and the larger Washington, DC, metropolitan region. Additionally, this project will significantly contribute to growing the cybersecurity workforce talent pipeline in the region; delivering diverse, educated, and skilled cybersecurity technicians to local military installations; and helping to meet the cybersecurity workforce gap in the surrounding DC metropolitan area.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 101B

### **Johnston Community College (JCC)**

*Integrating Biotechnology and Applied Engineering to Meet Emerging Advanced Technological Workforce Needs*

Bio Blend seeks to accomplish three goals: (1) create a unique curriculum certificate that integrates biotech manufacturing with industrial technology in an applied engineering curriculum, (2) create a multi-skilled talent pipeline from JCC to industry, and (3) provide hands-on training in a simulated drug manufacturing environment. Bio Blend includes offering a curriculum, which blends biotechnology and applied engineering; a dedicated career coach to work with industry to provide internship opportunities; an certification in Delta V, an industry recognized software. Bio Blend will produce at least 15 graduates ready for hire by June of 2022.

## Booth # 102

### **Northeast Community College**

*Developing a Precision Agriculture Workforce Ladder through Secondary, College, and Incumbent Worker Education that Integrates Emerging Technologies and Farm Data*

Northeast faculty have created a precision agriculture career ladder by developing high school curriculum with teachers, modularizing college curriculum, and delivering modules and customized industry trainings to producers. The revised curriculum features real-world scenarios including the collection and analysis of Northeast farm data and simulator technologies. Local industry provides insight as faculty develop technology-enabled, data-driven, experiential precision agriculture curriculum.

## Booth # 103

### **Valencia College**

*Broadening Education, Access, and Momentum (BEAM) in Energy Management and Controls Technology*

Learn about Florida's first Energy Management and Controls Technology AS degree and how Valencia College is training students to better the planet through building energy efficiency. Valencia's program prepares students to become highly trained technicians operating and maintaining technologically complex, high performance buildings. Come learn about our industry partner development; K-12, female, and veteran student outreach; and student experiences both in the lab and in industry.

## Booth # 104

### **Pellissippi State Community College**

*Water/Wastewater Certified Operator Education Project*

After spending the first year developing curriculum and obtaining approval for the Water Quality Technology AAS program, we are now enrolling our first future alumni. During the first year, we were able to overcome significant modifications in curriculum, external delays in program approval, and unexpected changes in key personnel. We are starting our first cohort in spring 2020, and are in the process of developing classes for online delivery.

## Booth # 105

### **Whatcom Community College**

*Expansion of the CyberWatch West Resource Center*

CyberWatch West (CWW), soon to be the National Cybersecurity Training & Education Center (NCYTE), is an NSF ATE center dedicated to cybersecurity education and outreach. The consortium is focused on building educational and industry partnerships and delivering professional and student development programs. CWW continues its mission to build a stronger cybersecurity infrastructure through innovative online curricula, robust student competitions, and building pathways.

## Booth # 106

### **Cape Fear Community College**

*CT-EnTICE: Chemical Technology – Enrolling Technicians and Improving Community Engagement*

The CT-EnTICE project has implemented strategies to increase student enrollment and retention and has provided outreach activities for high school teachers and their students. Within three years the project has helped the chemical technology program double its enrollment and obtain over a 90 percent retention rate. These accomplishments are a direct result of a high school competition, a laboratory check-out system, a summer camp, and the implementation of a program liaison. Stop by to learn how adopting these strategies could impact your ATE program.

### **Booth # 107**

#### **Hillsborough Community College** *FLATE: Florida's Advanced Technological Education Center of Excellence*

FLATE plays a leading role in developing and implementing its robust industry-aligned, credential-based technical education model supporting Florida's manufacturing industry. For 15 years, FLATE has frequently been recognized nationwide for its best-in-class and innovative professional development, curriculum, and outreach/recruitment solutions. A sharp focus on building a strong and sustainable community of practice inclusive of all Florida's manufacturing stakeholders drives excellence and innovation for manufacturing education. See FLATE.org and MadeInFlorida.org.

### **Booth # 201**

#### **Palo Alto College** *Leveraging Supply Chain and Logistics Emerging Technologies to Serve Industry Needs*

Palo Alto College (PAC) has: (1) established three dual credit programs with partner high schools where students can earn an Logistics and Supply Chain (L/SC) AAS degree; (2) targeted recruitment to educate students about L/SC career opportunities; (3) created a discover logistics training module for secondary school educators; and (4) established a transfer agreement between PAC and Wayland Baptist University's four-year L/SC BAAS program. In partnership with Systemic, Inc., students get involved in supply chain management by using miniature drones to transport logistics item. Hear from students why they decided to choose the Logistics and Supply Chain pathway.

### **Booth # 202**

#### **Owensboro Community & Technical College (OCTC)** *Advancing Female Incumbent Workers in the Manufacturing Industry*

To grow the next generation of manufacturing leaders while promoting greater gender diversity, OCTC developed GO Females. Designed as a solution to address challenges facing local female manufacturing employees, GO Females is a hybrid program that combines competency-based online learning with hands-on skill labs to practice and demonstrate mastery. Sponsoring employers support eight hours of paid release time a week for participants to attend class and work on labs. Classes are offered on or near the work site and lead to an associate's degree. UniFirst Corporation is the first company champion to sponsor a GO Females cohort of employees who start classes in October 2019.

### **Booth # 203**

#### **Columbus State Community College** *Strengthening Mobile Application Resources and Technician Training: The SMARTT Project*

Columbus State Community College, in collaboration with the National Convergence Technology Center at Collin College and with regional industry representatives, is developing a multi-disciplinary career pathway in mobile application development technology. Students will collaborate through state-of-the-art curriculum and receive real-world experience in the design and use of development-related software and hardware in a program focused device lab.

### **Booth # 204**

#### **Tunxis Community College** *Regional Center for Next Generation Manufacturing (RCNGM)*

RCNGM provides community colleges with a seamless career pathway in advanced manufacturing. The center offers professional development opportunities for educators; provides articulation pathways that include stackable credentials; and addresses the need to market manufacturing as a high-tech industry. Stop by for RCNGM's DVDs, which include a focus on women in manufacturing.

### **Booth # 205**

#### **Moraine Valley Community College** *The Internet of Things Coordination Network*

The Internet of Things Coordination Network consists of industry representatives, manufacturers, integrators, academia, and end users of integrated smart devices. The term Internet of Things (IoT) is used to describe the deployment and integration of smart devices capable of monitoring, controlling, collecting, and sending and receiving data to intelligent systems. Community colleges across the nation are struggling with building programs to meet this future workforce need. This network is designed to support the community college academic community by studying the emergence of IoT technologies. This network will research the IoT products, technologies, standards, and applications.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 206

### **Moraine Valley**

#### **Community College**

*Center for Systems Security and Information Assurance (CSSIA)*

CSSIA was founded in 2003 to expand the pipeline of professionals in the emerging field of cybersecurity. CSSIA has worked with community colleges, educators, and business leaders to identify and address obstacles in building successful cybersecurity certificate and degree programs. CSSIA's National Support Center continues to work to expand the nation's pool of information assurance/cyber defense professionals.

## Booth # 207

### **Sinclair Community College**

*The STEM Guitar Project*

The STEM Guitar project has been impacting applied STEM education for more than 10 years. Faculty professional development combining traditional classroom instruction using Next-Gen Science Standards and Common Core math are combined with the technical skills of assembling and manufacturing guitars. The project has expanded to include CNC skill training and acoustic guitar assembly to continue the technician skill learning that applies to all advanced manufacturing skill areas.

## Booth # 208A

### **Morgan Community College**

*Industrial Controls and Telematics Across Disciplines*

Morgan Community College will develop an Industrial Controls and Telematics (ICT) certificate to bring the modern practices of telematics and industrial controls into the current precision agriculture and industrial maintenance technician programs. Having employees with knowledge of industrial controls, programmable logic controllers, principles of relay logic, workflows, automation systems, and the ability to troubleshoot will help industry minimize downtime and maximize returns while addressing the gap of the expected annual growth rate of this emerging field.

## Booth # 208B

### **Arapahoe Community College**

*A Community College and Industry Partnership to Produce a Highly Qualified Cybersecurity Workforce*

This project will create and implement a responsive AAS cybersecurity program aligned with industry needs and federal standards. The project's innovative approach focuses on integrating experiential and project-based learning to provide real-world experiences and equip students with job skills. Addressing the underrepresentation of women in these courses and careers, the project can serve as a model for developing cybersecurity programs where course designers work with industry professionals to identify workplace competencies and build courses to meet industry needs with a focus on increasing female participation.

## Booth # 209

### **Columbus State**

#### **Community College**

*Information Technology Career Pathways through a Flexible Apprenticeship Model*

Columbus State Community College, in collaboration with industry and educational partners, will establish an industry-aligned work study model in IT pathways. The project goals are to leverage collaboratively developed and industry-led curriculum, leading to the creation, pilot, and scale of an experiential learning model for students in IT pathways starting in cybersecurity. The broader impact of this project includes a replicable, flexibly customized work study program designed for the IT industry that can be implemented nationwide.

## Booth # 210

### **Columbus State**

#### **Community College**

*Building an Industry-Aligned Pathway to Careers in Cloud Computing*

Columbus State Community College and Northern Virginia Community College in partnership with Amazon Web Services, industry partners, regional high schools, and partner universities will establish an industry-aligned pathway in cloud computing to increase the supply of qualified technicians with proficiency in cloud technology. Collaboratively developed and industry-led curriculum will lead to the Cloud Fundamentals certificate stackable toward an AAS with cloud specialization.



### **Booth # 211**

#### **Columbus State Community College**

##### *Data Analytics Technician Advancement (DATA) Program*

Columbus State Community College, in partnership with Central Ohio companies, regional high schools, and two regional universities will develop a new career pathway in Data Analytics. This project will meet the need for online education delivery and a data analytics technician 2+2+2 career pathway. Additional project deliverables include development of a data analytics internship guide and learning modules that educate students on the foundational aspects of data analytics that can be adapted to contextualized courses.

### **Booth # 212**

#### **Palm Beach State College**

##### *Computer Outreach for Diverse Education (CODE)*

This project is designed to create a strong community of students, industry professionals, and business representatives that will move students along a career pathway that connects college credit certificate programs to the cybersecurity AS and BAS programs at Palm Beach State College. CODE intends to increase enrollment, eliminate instructor shortages, expand course offerings, and promote movement on the cybersecurity pathway by collaborating with industry partners to meet their current and future staffing needs.

### **Booth # 213**

#### **Rochester Institute of Technology** *RoadMAPPs to Careers: A New Approach to Mobile Apps Education featuring a Mapp for Deaf and Hard-of-Hearing Students*

The need for mobile app developers has skyrocketed. Our curriculum focuses on the use of MS Xamarin cross-platform development tools to provide native UI's, native API access and native performance for both Android and iOS apps. In May 2020, we will be hosting a mini-conference to bring together instructors of mobile programs across the country to share experiences and innovative curriculum efforts to promote better design and development practices. Stipend money is available for travel and lodging.

### **Booth # 214**

#### **Edmonds Community College** *National Resource Center for Materials Technology Education (MatEdU)*

MatEdU focuses on material science, provides web-based resources, instructional materials, and promotes the use of core competencies for technicians that handle materials. Rapid changes and new developments in materials as well as traditional areas of materials require having educated technicians. A collection of fully cataloged and peer-reviewed modules, demos, and laboratory exercises are available on the MatEdU website:  
[www.materialseducation.org](http://www.materialseducation.org).

### **Booth # 301A**

#### **Phillips Community College of the University of Arkansas** *Arkansas Delta Information Systems and Cyber Technician Education Initiative*

This project will increase the number of skilled information systems and cyber technicians who graduate with certificates and degrees, earn industry certifications, and are prepared to enter the workforce. To reach this end, the project will develop and implement recruitment and retention strategies for students, provide support to maximize student success, develop and revise curriculum to meet the changes in the field, provide professional development for faculty to ensure high quality teaching and learning, and continue to strengthen the bond between industry and business leaders in the community.

### **Booth # 301B**

#### **Gateway Technical College** *Advancing Manufacturing through Integration of Information Technology*

This project is combining IT and advanced manufacturing to create a skillset to enable individuals to work on both sides of the industry.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 302

### **Kentucky Community & Technical College System**

#### *Geospatial Technology Center of Excellence: Growing the Workforce*

The new concept modules of the GeoTech Center will be demonstrated. The international team will discuss international standards in geospatial technology and how the GeoTech Center is working with colleagues in Europe. A pathway for certifications of educators in geospatial technology will be shown. The important concept of drone defense will be discussed; and the use of UAS thermal infrared imagery will be shared. The GeoTech Center will announce the dates for the GeoEd 20 conference and the 2020 regional workshops and topics.

## Booth # 303

### **Spartanburg Community College**

#### *Working with Industry to Incorporate Cybersecurity into Networking Programs*

Spartanburg Community College's project is designed to address the shortage of skilled technicians, trained in network/cybersecurity technology. A business and industry leadership team (BILT) representing regional industry employers, was formed to co-lead this process and provide an enhanced curriculum to produce technicians that will be in high demand by regional employers. Methods used have been the creation and expansion of the BILT, aligning a strong curriculum with BILT needs, providing faculty with professional development, and recruitment and retention activities that reach out to populations that will benefit from expanded educational opportunities.

## Booth # 304

### **Trident Technical College**

#### *Creating Learning Opportunities for Undergraduates in Developing Technologies (CLOUDTech)*

The primary goal of this project is to advance the national knowledge base of virtualization cloud technology curriculum and hands-on lab activities to meet industry needs. A secondary goal is to strengthen the STEM pipeline in information technology through K-12 outreach and the development of transfer pathways.

## Booth # 305

### **Bridgerland Technical College**

#### *Scaling Up Utah's Automated Manufacturing Technician Pipeline*

Scaling Up Utah's Automated Manufacturing Technician Pipeline aims to fill the shortage of skilled advanced manufacturing technicians through a second iteration of our successful AM STEM Academy program. In addition to preparing high school students for advanced manufacturing careers, this project provides refined curriculum, programmatic resources, and professional development to local colleges and universities. This project serves as a model of how colleges and secondary schools can collaborate through learning management systems to prepare participants for high-paying jobs and/or college.

## Booth # 306

### **St. Petersburg College**

#### *Biomedical Engineering Technology – Pathways to Medical Device Manufacturing, Networking, and Cybersecurity*

St. Petersburg College's Biomedical Engineering Technology AS degree program is a leader in medical device technician education. A strong collaboration with industry partners and an advisory board created a unique program to train students in a high demand field. The NSF ATE grant has provided the opportunity to expand the program to include content on manufacturing and cybersecurity in the medical device field. This showcase will provide examples of the curriculum being developed through the grant and the outreach efforts to increase enrollment in the program.

## Booth # 307

### **Itasca Community College (ICC)**

#### *Development of a 21st Century Industrial Process Operations Program*

The Process Operations program at ICC trains perspective employees to meet the employer expectations for multiple 21st century process industries. The curriculum is industry driven through its development and remains responsive to regional fluctuations. Student development and assessment areas include technical knowledge, professionalism, and process awareness.

### **Booth # 308A**

#### **Central Virginia Community College (CVCC)**

##### *Improving Mechatronics Technician Training for the Advanced Manufacturing Industry*

This project will support mechatronics technician training for the growing advanced manufacturing industry by (1) enhancing course content and technical experiences for students, (2) providing comprehensive professional development for technician educators, and (3) developing educational pathways to support student recruitment, retention, and completion from middle school to college. Grant funds will augment the Mechatronics AAS degree program at CVCC with Rockwell Automation PLC Maintainer certifications. These certifications are industry-recognized and highly valued by manufacturing employers in the Central Virginia region.

### **Booth # 308B**

#### **Portland Community College**

##### *Enhancing Geographic Information Science Technology Education (eGIST)*

The goal of Portland Community College's project is to create a career pathway with industry-validated curriculum in a one-year certificate in unmanned aircraft systems (UAS) and a two-year degree in geomatics. We are excited to join the ATE community, make connections with other institutions, and learn how we can build on the many projects in related fields to provide the best education and experience for our diverse students.

### **Booth # 309**

#### **Parkland College**

##### *Precision Agriculture Curriculum Enhancement (PACE)*

The PACE project uses emerging technologies in conjunction with agronomy to enhance precision agriculture education by developing close partnerships with local and regional industry partners. The project is focused on updating curriculum and working directly with high schools through the facilitation of workshops specifically for vocational agriculture teachers.

### **Booth # 310**

#### **University of New Mexico**

##### *SCME: Scaling Microsystems Support*

The Support Center for Microsystems Education (SCME) is focused on the exploding field of microsystems technology. We have an extensive infrastructure to support our Micro Nano Education Special Interest Group community. Discover why microsystems are critical to our nation's hightech growth and how you can plug and play our materials into your STEM programs.

### **Booth # 311**

#### **Pennsylvania State University, University Park**

##### *The Nanotechnology Applications and Career Knowledge (NACK) Support Center*

##### *Nanotechnology Professional Development Partnership: A Web-Based, Live-Streaming Approach for Optimizing Impact, Effectiveness, and Cost*

The NACK National Support Center for Nanotechnology Workforce Development has a mission to provide assistance to existing or developing micro- and nanotechnology workforce education programs at educational institutions across the U.S. NACK is facilitating the creation of stackable certificates; leading the RAIN (Remotely Accessible Instruments for Nanotechnology) Network; holding webinars; and providing classroom material to support national infrastructure. See [www.nano4me.org](http://www.nano4me.org).

### **Booth # 312**

#### **Clemson University**

##### *A Sustainable ATE Coordination Network for Enhancing Personalized Learning Using Virtual and Augmented Reality-Based Technology Innovations in Technician Education*

This coordination network is focusing efforts to use current advancements in artificial intelligence (AI) to create a national educational resource, which will address a key National Academies grand challenge of preparing the workforce for the STEM-focused jobs of the next decade. In this showcase, we will discuss outcomes of our AI workshops and share AI trends with industry.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 313

**University of Wisconsin–Madison**  
*Working Partners: Documenting the Impact of Industry Collaboration within the ATE Community*

The Working Partners Research Project discovers, documents, and disseminates key factors and core practices of successful industry partnerships within the ATE community. Results to date include a community-vetted set of partnership models and the challenges, impacts, and successful implementations for each, the development of mini case studies, and the launch of an online toolkit. This research will also provide the foundation for the work of the Engaging Educators/ Strengthening Practice ATE project beginning Dec 2019, which will create professional development curricula and conduct workshops to support educators with planning, initiating, and sustaining successful industry partnerships.

## Booth # 314

**Tennessee Technological University**  
*AM-WATCH: Additive Manufacturing – Workforce Advancement Training Coalition and Hub*

Tennessee Tech University has been developing and implementing a number of MOOCs, studio-based train-the-trainer workshops, additively innovative virtual lecture series, and instructional materials on several key topics of additive manufacturing with its project partners. A high number of impacted high school/community college educators and students indicated that the project has been providing numerous cutting-edge information blocks for their needs.

## Booth # 401

**Texas A&M Engineering Experiment Station**  
*Educating the Workforce in Cyber and Smart Manufacturing for Industry 4.0*

Industry 4.0 has resulted in continuing growth and development of smart manufacturing, which uses tools such as big data, and advanced robotics. Workers in industries of today need new skills to keep up with the changing landscape of manufacturing. To help meet this workforce need, this project will develop integrated courses and hands-on labs, create a smart manufacturing certificate, develop career pathways for students to fill advanced manufacturing careers, and facilitate faculty professional development. This will help fill the growing needs of this fourth industrial revolution.

## Booth # 402

**Northwestern Connecticut Community College**  
*Engaging Students from Classrooms and Camps to College and Advanced Technological Careers*

Northwestern Connecticut Community College is working with the Torrington School District and area manufacturers to build a technology education pipeline from middle school to high school and on to community college and careers. This collaborative effort involves coordinating activities with industry, providing math tutoring for students, and providing industry related professional development activities for teachers. The showcase will share information about our program structure and how we formed industry partnerships, as well as feedback from the students and teachers.

## Booth # 403

**SUNY Polytechnic Institute**  
*ATE Regional Center for Semiconductor and Nanotechnology Education (NEATEC)*

NEATEC is leading the way in developing model programs for serving the workforce development needs of nanotechnology and nano electronics businesses in the Northeast. In partnership with local education institutions and businesses, NEATEC provides community college and secondary school students with extraordinary hands-on opportunities to engage in cutting-edge education and training through cooperative learning, internships, and outreach programs—efforts that will have a direct and immediate impact on the readiness and capabilities of the nanotechnology workforce in New York and Western New England.

### **Booth # 404**

#### **Chippewa Valley Technical College**

*Smart Manufacturing and Resources  
for Transforming the Future  
(SMART Future)*

*Robotics Training in Education and  
Advanced Manufacturing Sectors  
(Robo Teams)*

*Technological Education,  
Advancement, and Change in  
Cyber-Physical Systems Education  
(TEACH CPS-ED)*

This showcase features three projects: (1) The SMART Future project brings together rural high school technology instructors, technical college faculty, and industry professionals to design and deliver instruction in Industry 4.0, supply chain, and automation concepts via a mobile manufacturing laboratory. (2) The Robo Teams project focuses on high school collaborations with secondary students at rural high schools to increase their access to education the high-growth, rapidly changing manufacturing industry. (3) The TEACH CPS-ED project features goals to expand STEM opportunities and prepare technicians for operations technology and IT programs and careers through applied education of cyber-physical systems; and to increase the capacity of postsecondary and secondary instructors to provide instruction in cyber-physical systems.

### **Booth # 405**

#### **Grayson College**

*Boosting New Careers in Advanced  
Manufacturing Industries*

Through extensive work from the college, area high schools, and local industry, the Advanced Manufacturing Program continues to thrive as it begins its third year at the college and in the community. This showcase will focus on the planning and implementation of the program and partnerships, which begin at the ninth grade level for high school students and continues through high school, college completion, and employment in local industry. The third year of the program is focused on outreach to additional ISDs in the college's service area and working with employers to strengthen our internship and mentoring programs.

### **Booth # 406**

#### **Bucks County Community College**

*Increasing the Number of  
Workforce-Ready Engineering  
Technicians in Southeastern  
Pennsylvania*

This project aims to contribute to the national need for a skilled STEM workforce by increasing the number of well-trained engineering technicians. To recruit more students into the Engineering Technology program, the project will develop articulation agreements with the college's Center for Workforce Development. Through this articulation, credits toward an AAS degree in Engineering Technology will be granted for specific certifications obtained through the Center for Workforce Development. In addition, the project will award certifications, digital badges, or college credits for other prior learning, including skills gained from military training.

### **Booth # 407**

#### **Shoreline Community College**

*Clean Tech ATE: Advancing  
Technician Training in Clean  
Energy Technology*

Shoreline Community College (SCC) will upgrade its Clean Energy Technology program curriculum and add long-term, project-based learning experiences that develop higher levels of software and engineering skills. By developing a curriculum that addresses industry-identified needs and contains job-specific experiences, the revitalized program will help students develop a skillset that prepares them for jobs in the field of clean energy. Currently, there is no national title for a clean energy analyst. However, SCC's Industry Advisory Board has identified a need for such a position; and this project will develop skill standards that align with industry needs. The ultimate results of this project will expedite Shoreline graduates' placement into energy management jobs, and contribute new materials to the ATE community.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 408

**Patrick Henry Community College**  
*Innovate, Design, Engineer, and Accelerate Career Pathway*

The IDEA Academy program provides dually enrolled career and technical high school students a pathway from high school to an AS program and a skill set for a career in engineering technologies. The program uses a project-based curriculum to deliver 24 college credits along with embedded credentials. This showcase highlights two students who began in the first cohort and are now in their last year of completing an associate degree in a STEM discipline. One student has started her own business operated out of the college's Thomas Dalton IDEA Center Fab Lab/Accelerator. The second student has completed engineering projects using RFID technology. This showcase will highlight products created by the student entrepreneur and the RFID student project.

## Booth # 409

**Metropolitan Community College**  
*Advanced Technological Education in the Intelligent Infrastructure for the Industrial Internet-of-Things*

This project focuses on connections to the industrial Internet-of-things (IIoT) by creating curriculum and training to introduce IIoT concepts to a multitude of diverse learners by using sensors to apply basic principles related to lean production, just-in-time inventory, predictive maintenance, and rapid prototyping. Train-the-trainer workshops and training kits are available at no cost to participating schools to check out for program implementation.

## Booth # 410

**St. Charles Community College**  
*Educating Agriculture Technicians*

The Educating Agricultural Technicians project is focused on program development, recruitment, and outreach for the new agriculture program in St. Charles County, Missouri. The recruitment and outreach efforts from year one of the project were focused on rural area high schools and middle schools to increase the number of agriculture technicians in the region.

## Booth # 411

**Rochester Institute of Technology**  
*DeafTEC Resource Center*

The DeafTEC Resource Center is housed at the National Technical Institute for the Deaf, one of the nine colleges of the Rochester Institute of Technology in Rochester, NY. The goal of the resource center is to increase the number of deaf and hard-of-hearing (deaf/hh) individuals in highly skilled technician jobs in which there continues to be underrepresentation and underutilization of such individuals in the workplace. Stop by our booth to learn about our resources and professional development opportunities that will help you increase the diversity in your projects and centers by creating more inclusive learning/work environments for deaf/hh students and student veterans with hearing loss.

## Booth # 412

**Missouri State University**  
*VESTA National Center of Excellence*

VESTA provides students interested in grape growing and wine making access to quality online coursework, from industry-leading instructors that is enriched with essential hands-on laboratory and field experiences. This unique partnership between education and industry from across the nation provides students access to essential technical grape and wine education at anytime from anywhere.

## Booth # 413

**Prince George's Community College**  
*National CyberWatch Center*

The National CyberWatch Center is a collaboration of 400+ academic institutions, commercial, and government partners. Its mission is to lead collaborative efforts to advance cybersecurity education and strengthen the national cybersecurity workforce. CyberWatch is focused on growing program and faculty capabilities based on models of excellence, promoting the cybersecurity profession, expanding career pathways for students, and advancing research in cybersecurity.

### **Booth # 414**

#### **Wake Technical Community College**

*Robotics Awake: Promoting the Diffusion of Innovation through Curriculum Development and a Technician Training Community College Extension Model*

In the Robotics Awake ATE project, Wake Tech has collaborated with industry partners and local educational institutions to create and diffuse a Collaborative Robotics Technician and Programmer certification program made up of three stackable credentials. This project has obtained three collaborative robots for students to train on to meet certification requirements.

### **Booth # 501**

#### **Columbus State Community College**

*Logistics Engineering Technology Work Study*

Columbus State Community College collaborates with universities, high schools, and several regional employers to implement a project focused on educating next-generation technicians in logistics engineering technology (LET). The LET Work Study project will enhance the existing career pathway with real-world experiential learning, supporting the increasingly complex technology needs of the supply chain sector. The resulting program will provide graduates with directed employment opportunities in a variety of industries.

### **Booth # 502**

#### **Columbus State Community College**

*Collaboration of Midwest Professionals for Logistics Engineering Technology Education (COMPLETE) Project*

The COMPLETE project is a consortium of Midwest community colleges: Columbus State Community College, Oakton Community College, and Sinclair Community College. The project aims to expand pathways for next-generation logistics engineering technicians, in collaboration with university, high school, and industry representatives. The consortium is working to create replication framework for expanded curriculum and best practice protocols for returning learners.

### **Booth # 503**

#### **Florida State University**

*Assessing Educational Pathways for Manufacturing in Rural Communities: An Investigation of New and Existing Programs in Northwest Florida*

Advanced Manufacturing Pathways, a targeted research project focused on the rural Florida panhandle, is in its third year. In this showcase, we will share the results of our syllabi analyses and employer interviews, as well as our methodologies and next steps.

### **Booth # 504**

#### **Columbus State Community College**

*Pathways for Alternative Energy Automotive Technicians*

Columbus State Community College has developed a new career pathway in alternative energy automotive technology with support from a dedicated industry leadership team. The curriculum optimizes emerging technologies and techniques including project-based learning, integrating learning objects, simulations, and a STEM-intensive curriculum. The program provides education in technology, engineering, automotive, and mathematics to prepare new alternative energy automotive technicians.

### **Booth # 505**

#### **Lane Community College**

*Independent Learner Energy Education Design (iLEED) Project*

The iLEED Project takes CTE education out of the classroom/lab to an online instructional environment. iLEED accomplishes the CTE program practical experience requirement by enlisting industry practitioners referred to as fieldwork mentors. The project's fieldwork mentors typically come from public electric utilities that have energy efficiency staff members who volunteer their time to work with our students when there is a course lab project to complete. Stop by our booth to hear about proof of concept.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 506

**Madison Area Technical College**  
*Center for Renewable Energy  
Advanced Technological Education  
Support Center (CREATE-SC)*

CREATE's mission is to advance the field of renewable energy by championing cutting-edge renewable energy education programs. CREATE works with faculty, providing exemplary instructional materials and curricula, promoting renewable energy careers, establishing academic partnerships with industry, and addressing the rapidly evolving knowledge and skills required by renewable energy technicians.

## Booth # 507

**Indian Hills Community College**  
*Developing Photonics Education in  
Iowa's Rural Secondary Schools*

This project brings educational programming in the high-growth, high-demand field of photonics to a population rarely afforded such opportunities: rural high school students and teachers. The Developing Photonics Education in Iowa's Rural Secondary Schools project will create an engaging, dual credit online photonics course for rural high school students, as well as provide photonics-related professional development to rural high school science and technology teachers. The project's primary goal is to increase the number of rural Iowa high school students in the photonics technician pipeline.

## Booth # 508

**Florence-Darlington  
Technical College, Science  
Foundation Arizona**  
*Collaborative Research – HSI ATE  
Hub: Diversifying the ATE Program  
with Hispanic Serving Institutions  
Using Culturally Inclusive  
Mentoring and ATE Resources*

The HSI ATE Hub supports two-year Hispanic Serving Institutions seeking NSF ATE grants to advance technician education. The project couples a STEM planning process conducted at HSI colleges by the Kickstarter project with participation in the Mentor-Connect grant preparation and leadership development mentoring experience, develops Hispanic ATE PI mentors, provides a collection of HSI-specific resources, and connects HSIs within ATE.

## Booth # 509

**Central Carolina  
Community College**  
*Technician Training in Advanced  
Building Performance Analysis  
and Verification*

Today's construction industry is a high-tech landscape that plays a significant role in human health, resource management, and energy consumption. Modern buildings contain complex systems that require skilled technicians to properly design, install, and verify using technical skills along with scientific and mathematical theory and knowledge. This project is working to provide students with the education and experience needed to succeed as certified energy raters for the residential and commercial building markets.

## Booth # 510

**Columbus State  
Community College**  
*Design Thinking: Additive  
Manufacturing Summer Institute*

Columbus State Community College, with regional education and industry partners, is developing a career pathway in additive manufacturing by piloting a new program that will ultimately increase the number of qualified technicians. Columbus State will address this employment gap by implementing an immersive summer program for high school students and simultaneously providing high school teachers with professional development to create a pathway to an associate degree.

## Booth # 511

**Columbus State  
Community College**  
*Manufacturing Experiential  
Advancement Readiness Network  
Project (EARN)*

Columbus State Community College, in collaboration with Lorain County Community College and industry, state, and education partners, is advancing experiential, work-based learning programming and outreach to increase the number of qualified advanced manufacturing technicians. The EARN project will provide a model for developing programs, processes, and partnerships within additive manufacturing.



### **Booth # 512**

#### **North Arkansas College**

*Effectively Delivering Networking and Cybersecurity Education in a Rural Environment*

North Arkansas College is infusing its IT/network systems program with cybersecurity components and adding alternate modes of course delivery to increase the number of skilled technicians who are trained in network technology with a security focus. This showcase will focus on the college's first two years of delivery from the classes in Harrison to students at our remote Carroll County Center site.

### **Booth # 513**

#### **Indian River State College**

*Center for Laser and Fiber Optics Education*

LASER-TEC's mission is to develop a sustainable pipeline of qualified laser and fiber optics technicians to meet the industry needs in the United States. The center offers a wide range of resources for colleges interested in offering courses or programs in lasers, photonics, optics, or fiber optics, such as flexible curriculum, professional development, low-cost comprehensive toolkits, and outreach materials.

### **Booth # 514**

#### **Indian River State College (IRSC) Regional Center for Nuclear Education and Training (RCNET)**

RCNET is designed to address nuclear workforce demands in the power generation, life sciences, and environmental management fields. Since 2008, RCNET has helped more than 60 colleges launch and maintain nuclear programs which has resulted in the successful placement of more than 3,000 program graduates in nuclear technician jobs at more than 100 industry partner locations. This year's booth features a virtual reality (VR) platform of a nuclear power plant built by RCNET and available for anyone for download. This VR simulation replicates IRSC's flow loop and contains three human performance tasks.

### **Booth # 601**

#### **New Jersey Institute of Technology**

*Renewable Energy Systems Training (REST) Laboratory Development and Workforce Training*

Renewable energy systems are the most efficient and environmentally friendly power generation solutions that have created a continuously expanding job market in industry. This project will significantly contribute to the renewable energy workforce training by providing functional knowledge and understanding of solar photovoltaic systems integration, installation, startup, commissioning, protection, and troubleshooting. Moreover, this project will include professional development workshops for faculty, K-12 student outreach through summer camp programs, and a new online multimedia package for use by all remote users from universities and colleges across the U.S.

### **Booth # 602**

#### **Texas A&M Engineering Experiment Station**

*Collaborative Research: Providing an Adaptive Learning Environment for the Acquisition of High Value Manufacturing Skills*

As a part of this NSF ATE project, four professional development sessions were organized in the summer of 2018 and 2019 in Houston, Texas, targeting the energy industry. All programs were two-days long and focused on two key aspects of high-value manufacturing that included manufacturing operations and manufacturing quality excellence. The professional development sessions were focused on materials and inventory planning, production economics, manufacturing quality, non-destructive evaluation, statistical process control, and Lean Six-Sigma. This showcase presents the data analysis and findings of those four educational sessions.

### **Booth # 603**

#### **Rose State College**

*Collaborative Research: Unmanned Aerial Systems (UAS) and Specialized Workforce Development to Support Oklahoman Agriculture and Industry*

The utilization of UAS in commercial applications is expected to maintain growth for the foreseeable future. With the growth of UAS in mind, the Engineering and Science Division at Rose State College has undertaken a collaborative effort with the University of Oklahoma's Aerospace Engineering Program. The goal of this effort is to expose engineering and technology students to usage, maintenance, and the theory associated with UAS and potential UAS applications; improve the transition process for Rose State students entering the Aerospace Engineering program at the University of Oklahoma; and develop materials and programs to increase STEM enthusiasm in K-12 students.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 604

### **Miami Dade College**

#### *Cybersecurity Opportunities and Methods that Promote Access and Student Success*

Miami Dade College is the largest and leading degree granting institution for minorities. The program provides faculty training to develop hands-on cybersecurity education and utilizes the state-of-the-art Cyber Security Center of the Americas. The project collaborates with Miami Dade County Public Schools to improve teachers' cyber-skills; and established a pipeline boot camp for dual enrollment to college for cybersecurity pathways. The project also maps courses in the curriculum to industry certifications.

## Booth # 605

### **Central Oregon**

#### **Community College**

#### *Northwest Engineering and Vehicle Technology Exchange (NEVTEX)*

This showcase will share information on the Advanced Vehicle Technician Standards for high-voltage and high-pressure vehicle systems, and the use of outreach liaisons to enhance dedicated student recruitment efforts.

## Booth # 606

### **Motlow State Community College**

#### *Smart Manufacturing for America's Revolutionizing Technological Transformation (SMARTT)*

In this project, we developed curricular materials on smart manufacturing and connected industry to academia through workshops for STEM and advanced manufacturing educators. Two workshops on smart manufacturing are organized every year, one in Connecticut and the other in Tennessee. The workshops include speakers from industry and a hands-on component, which includes training on coding drones.

## Booth # 607

### **Eastern Florida State College**

#### *SpaceTEC Renewal – National Resource Center*

The SpaceTEC National Resource Center for Aerospace Technological Education, now in its 17th year, has established three divisions: SpaceTEC, supporting the nation's civil, military, and commercial space sectors with educational resources, competency-based standards and industry-endorsed certifications; CertTEC, supporting military, aviation and advanced manufacturing with competency-based standards and industry-endorsed certifications; and Credential Testing Services, offering third-party computer-based testing services to clients world-wide.

## Booth # 608

### **University of Arkansas**

#### *Opening Pathways to Employment through Nontraditional Geospatial Applications in Technical Education (OPEN-GATE)*

Through the efforts of the OPEN-GATE project, we aim to improve overall knowledge and awareness of location-based technologies in the developing workforce by (1) providing opportunities and resources for educators to develop skills in spatial data and analysis, that in turn, can be integrated into existing curriculum across a range of topical areas and disciplines; (2) engaging industry partners as stakeholders in identifying key skill sets for the next workforce generation; and (3) extending opportunities to students for development of valuable skill sets for future employment. The showcase will highlight key successes we have experienced over the past three years in these areas.

## Booth # 609

### **Collin County Community College**

#### *Information Technology Skill Standards, 2020 and Beyond*

IT Skill Standards 2020 and Beyond is creating a set of employer-led and verified information technology (IT) skill standards for high-demand job clusters. Educators use skill standards to create relevant, future-facing curriculum to prepare students to meet employers' job requirements. Hundreds of employers and community college educators from across the nation are identifying essential skills in top IT job clusters.

## Booth # 610

### **Collin County Community College**

#### *National Convergence Technology Center (CTC)*

The National CTC mentors colleges through a community of practice that provides networking and resources; engages national industry leaders to help strengthen curriculum and validate job skills; delivers free faculty training on cutting-edge IT topics; disseminates strategies to recruit and retain underserved student populations; and supports seven regional hubs of high schools, community colleges, and universities to develop 2+2+2 pathways.

### **Booth # 611**

#### **Madison Area Technical College** *Building New Pathways to Biotechnology Technician Careers*

This project is working to: (1) embed authentic research experiences into the first-year biology curriculum; (2) increase access to STEM careers for liberal arts transfer students; (3) increase the number of students with in-demand skills in biotechnology; (4) improve and expand biotechnology academic and industry internship opportunities; and (5) provide curricular pathways through certificate programs. This showcase will highlight annual outcomes in each project area, and emphasize student successes and best practices.

### **Booth # 612**

#### **City College of San Francisco** *Collaborative Research – A Collaborative Approach to Work- Based Learning: Addressing the Needs of Community College Biotechnology Students and their Research University Mentors*

To improve workbased learning, we realized the importance of supporting both our students and their workplace mentors. Our project examines whether professional development workshops that encourage prospective mentors to consider best practices for hiring, onboarding, training, and supervising new employees will enhance the work-based learning of our students and serve our industry partners to develop and retain diverse talent.

### **Booth # 613**

#### **West Hills Community College** *Welding Education Long-Distance Community Outreach (WELDCO)*

Learning a technical skill, such as welding, is valuable for residents in Central Valley California, but because of distance and lack of transportation is often inaccessible. WELDCO offers an innovative approach for distance education of welding skills.

### **Booth # 614**

#### **Digital World Biology** *A Bridge to Bio-Link's Future*

Digital World Biology has created two websites that serve the biotechnology education community. Bio-Link.org is a database that describes biotechnology education programs, credentials, and partnerships between colleges and high schools. Biotech-Careers.org is a database of biotechnology companies, their business interests, and descriptions of biotechnology careers and education requirements. We will demonstrate how these resources can be used to tailor curriculum to local needs, connect with local industry, and help students find internships and jobs.

### **Booth # 615**

#### **Austin Community College** *Austin Community College Bio- Link Regional ATE Center for Biotechnology and Life Sciences and InnovATEBIO National Biotechnology Center*

InnovATEBIO national biotechnology center grant builds on the work of previous regional centers, projects, and the biotechnology community for the purpose of establishing a sustainable network of education and industry biotechnology hubs across the nation. The center also focuses on developing leadership, anticipating changes in workforce needs, and helps programs overcome common barriers such as student recruitment and program visibility. AC2 Bio-Link was a four-year regional ATE center grant that focused on educational and industry-based solutions using communities of practice (CoP) to effectively establish networks supporting hub development in Texas and Kentucky.

### **Booth # 616**

#### **Madison Area Technical College** *Consortium for Advanced Manufacturing of Cell and Tissue-Based Products*

This NSF ATE project is focused on developing a Coordination Network for Advanced Manufacturing of Cell and Tissue-Based Products. The creation of a national network of key stakeholders from community, industry, government, and academic sectors will serve as the driver for workforce development efforts that are both cross-disciplinary and designed around principles of broader impacts. The showcase will provide information on best practices for assembling a market-demand network, and the strategic map for movement towards stakeholder supported sustainability of this initiative.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 617

### **Forsyth Technical Community College** *Biosciences Industry Fellowship Project*

The National Center for the Biotechnology Workforce at Forsyth Tech has had close to 60 fellows, consisting of community college or high school instructors and several veterans, who came to Winston-Salem, NC to participate in either a one-month or three-week program. Fellows participate in boot camps at three community colleges with hands-on lab experiences, and shadow workers in various departments at a dozen different industrial/university hosting facilities. Visiting numerous key bioscience assets helps demystify the bioscience industry through professional development that is then used by the instructors to further illustrate industry principles in the classroom.

## Booth # 618

### **North Dakota State College of Science** *North Dakota Welds (NDWelds) Program: Advancing Welding Technician Skills for Students and Training for Educators*

The NDWelds program is working to enhance the welding technician skills for secondary school students, two-year college students, secondary school teachers, and two-year college faculty members. This project incorporates training modules developed through the ATE funded Regional Center for the National Center of Excellence in Welding Education and Training (Weld-Ed). The project will increase awareness among students from underrepresented groups. NDWelds significantly impacts the regional economic environment by filling a critical employment training need.

## Booth # 619

### **Norwalk Community College** *Recruitment and Retention of Women in Engineering and Engineering Technology*

This project will showcase activities implemented to increase the recruitment and retention of women in engineering and engineering technology programs. Results of the first year of the program will be shared.

## Booth # 620

### **Northeast Iowa Community College** *Northeast Iowa Advanced Manufacturing Technicians*

Northeast Iowa has focused their grant efforts on advanced manufacturing disciplines. The grant team has focused on the development of hybrid classrooms and is now working on competency-based curricula.

## Booth # 700

### **Florida State College at Jacksonville** *Meeting Industry Needs through a Two-Year Data Science Technician Education Program (DataTEC)*

DataTEC seeks to develop educational and career pathways to prepare Florida students for an array of data science roles, particularly in entry and middle-skill data science jobs. DataTEC will help to fill the growing void for data science skills training at the two-year associate's degree and technical certificate levels.

## Booth # 701

### **Central Community College** *Mechatronics with Instrumentation and Controls (MwIC)*

Central Community College in central Nebraska will leverage the resources from its state-of-the-art Mechatronics Education Center and its well-established business, education, and community relationships to implement this program development and improvement project. The goal of the project is to increase the number of qualified process instrumentation and control technicians to meet current and future workforce demands in Nebraska by developing a new pathway within an existing mechatronics program and deploying innovative recruiting, outreach, retention, and completion strategies.

## Booth # 702

### **CUNY Borough of Manhattan Community College** *A Simulation-Based Curriculum to Accelerate Math Remediation and Improve Degree Completion for STEM Majors*

Game-up your math and STEM classes with three free games that help students learn and explore as well as practice. Come try out our fun games: Algebots, a way to practice solving equations; XPonum, a game that explores graphs, slope, and intercepts by collecting gems; and Project Sampson, which features GIS concepts and disaster preparedness. Game levels range from middle school through college pre-calculus. Students love these games, and you will too.

### **Booth # 703**

#### **Thaddeus Stevens College of Technology**

*Skilled Women Get STEM Jobs: Recruiting and Engaging Female Students*

The Skilled Women Get STEM Jobs project focuses on recruiting more women in to the computer integrated machining (CIM), electrical technology, and water and environmental technology (WET) programs at Thaddeus Stevens College of Technology. The project uses the innovative approach of taking female high school students into industry to learn more about career opportunities available to them. The project has successfully increased female student enrollment in the WET and CIM programs.

### **Booth # 704**

#### **Miami Dade College**

*Dade Enterprise Cloud Computing Initiative (DECCI)*

This project is partnering with Amazon Web Services (AWS) to raise cloud literacy by providing students with in-depth, project-based learning opportunities and access to leading AWS technology. The project provides students a competitive advantage by strengthening academic offerings that lead to not only an academic credential, but also an industry certification, and ultimately employment to high-wage positions—the goal of most students seeking higher education. Additionally, an annual high school summer boot camp Cloud101 is hosted to build the pipeline for the 21st century cloud-based workforce. Faculty professional development in cloud curriculum and certification is also provided.

### **Booth # 705**

#### **Rowan College at Burlington County**

*Comprehensive Integration of Advanced Manufacturing Competencies throughout an Associate's Degree and a Stackable Certificate Curricula*

Rowan College at Burlington County in partnership with Rowan University is conducting this project. The motivating rationale for this project stems from direct observation and experiences supporting the fact that there is a tremendous regional and national need for graduates to possess the skills and competencies valued by industry. This project leverages past NSF-funded work as well as new workforce development initiatives to emphasize the critical skills and competencies needed to support advanced manufacturing curricula and industry.

### **Booth # 706**

#### **Klamath Community College**

*Rural Internship Program*

Rural colleges have found obstacles placing widely dispersed and economically disadvantaged students into traditional internship programs. To address the shortage of internship opportunities, Klamath Community College in rural south central Oregon is enhancing the job readiness of students in the Computer Engineering Technology and Digital Media and Design associate degree programs through virtual and peer-to-peer internships.

### **Booth # 707**

#### **Montgomery County Community College**

*NBC2: Building Regional and National Networks for a 21st Century Workforce for the Bioeconomy*

The Northeast Biomanufacturing Center and Collaborative, NBC2, is dedicated to developing curricula and faculty workshops to support technician training for the development, production, and analysis of biopharmaceuticals and other bio products. Recent additions to NBC2's industry-endorsed curriculum including ready-to-insert course modules and a comprehensive exam will be discussed as well as recent outreach activities with high school teachers and students.

### **Booth # 708**

#### **Northland Community and Technical College**

*National Center for Autonomous Technologies (NCAT)*

The National Center for Autonomous Technologies (NCAT) creates a public understanding of autonomous technologies and supports the development of educational programs and a highly-skilled technical workforce with a focus on providing professional development, STEM engagement, service learning, and a hub for educational and research resources.

# SHOWCASE SESSION I – ABSTRACTS

## Booth # 709

### **Kentucky Community & Technical College System**

*Mobile Additive Manufacturing Platform for 21st Century STEM Workforce Enhancement*

The overarching goal of this project is to enhance workforce development opportunities in additive manufacturing for high school students, community college students, incumbent workers, and manufacturers in Kentucky and Tennessee. Two courses will be developed that will include advancements in powder-based and metal printer applications to be integrated into the existing 3D Printing Technician certificate curriculum at the two institutions. These courses will cover improved product topology, metal sintering, advanced composite materials, and generative design. Customized curriculum on these topics will also be developed and offered in workshops for high school students and incumbent workers.

## Booth # 710

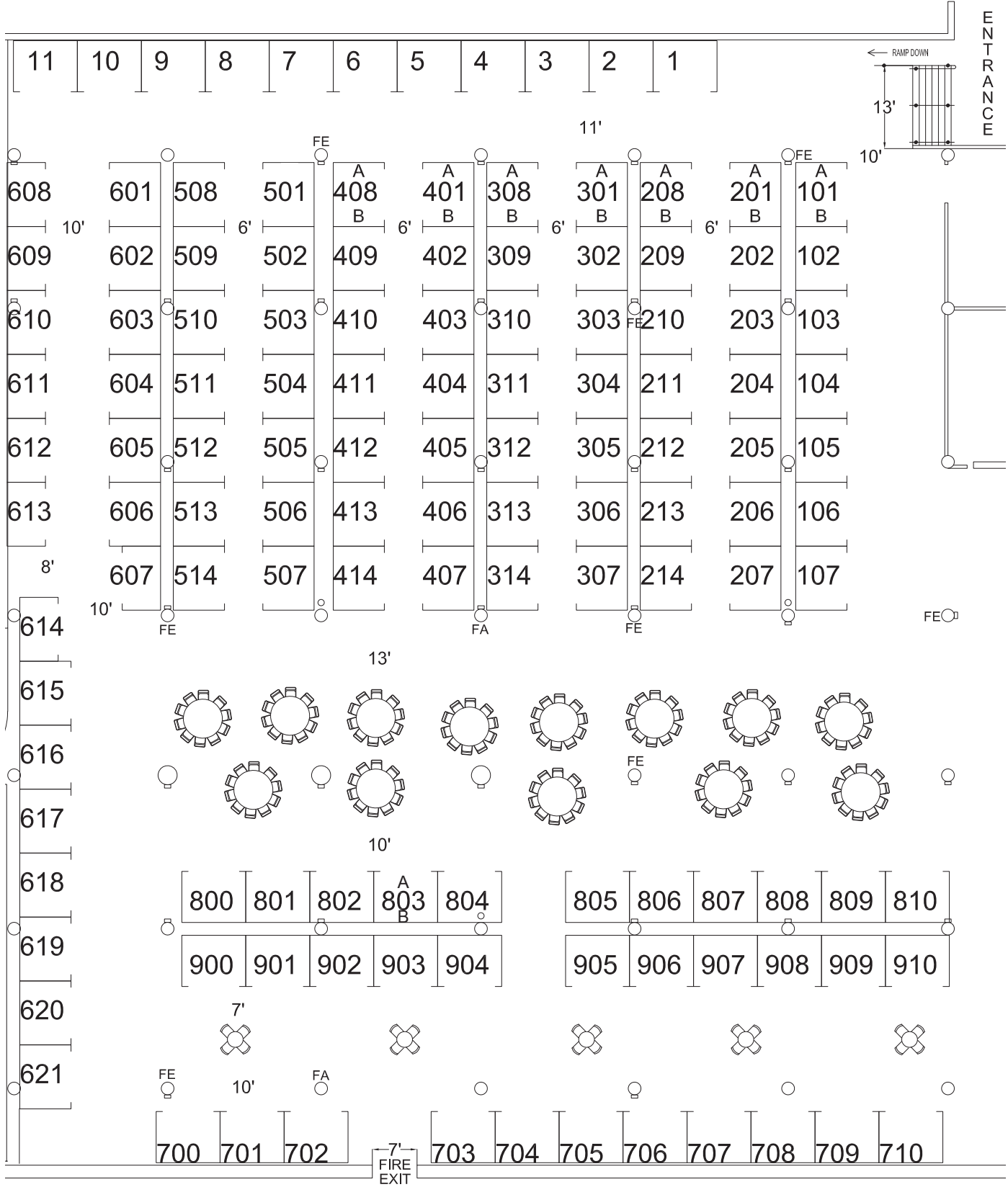
### **North Central State College**

*Project-Based Learning Across Engineering Technology Curriculum*

Students enrolled in the North Central State College's (NCSC) Engineering Technology program will form teams to develop a concept to design, construct, and test electric cars. Career center students will be recruited to participate with NCSC students in this project. At the end of the academic year, a 60-minute competitive race will be held to determine the endurance of their engineering concept.

# SHOWCASE II: ATE CENTERS AND PROJECTS

## SHOWCASE MAP THURSDAY • OCTOBER 24, 2019



## ATE Centers and Projects

3:45 – 6:00 pm • Exhibit Hall

Booth #	Alpha by Institution	Booth #	Alpha by Institution
501	Alamance Community College Mechatronics Technology Institute	514	City College of San Francisco Growing CTE/STEM Teachers & Makerspace
204	Albany Technical College Skilled Technical Education and Experiential Learning	619	Coastal Alabama Community College Associate of Applied Science in Dynamic Reality Technologies Program: Training Technicians to Use Extended Reality to Develop Workforce Training Simulations
614	Allan Hancock College Creating Precision Agriculture and Crop Protection Career Pathways via Industry Partnerships	613	Coastline College Cyber Up! Digital Forensics and Incident Response Project
401B	Ana G. Mendez University–Cupey Campus Responding to Post-Hurricane Maria Needs for Electronics and Photonics Technicians in Puerto Rico	504	College of the Canyons Advanced Technological Education for 2-Year Colleges (ATE-2YC)
007	Arizona State University Impact of System-Wide Contextualization of Math in Rural Arizona Colleges on Producing More Qualified Technicians (SFAz+8 CXM)	709	College of the Florida Keys Developing a 21st Century Training Program in the Florida Keys for Renewable Alternative Energy Technology: Wind, Solar, and Tidal Power
207	Asheville-Buncombe Technical Community College Skilled Workers Get Jobs: High School Engagement to Increase Perception of Technology and Engineering Careers	301B	Columbia Basin College Manufacturing the Future – Expanding Student Interest in Manufacturing Technology Careers
707	Atlantic Cape Community College Unmanned Aircraft Systems Operations and Maintenance Education and Training Project	802	Community College of Allegheny County Advancing Mechatronics Technician Education
505	Baker College of Flint Advancing Photonics and Laser Technician Education in Michigan	304	Community College of Beaver County Process Technology: Flexible Entry/Flexible Exit Curriculum Adaptation
807	Bemidji State University Minnesota State Advanced Manufacturing Center of Excellence – ATE Regional Center	005	CORD ATE 2.0: Preparing Technicians for Future of Work
909	Black River Technical College Precision Ag Technicians: Improving Arkansas Farming	004	CORD HI-TEC – High Impact Technology Exchange Conference
706	Bristol Community College The New England Water Treatment Training (NEWTT) Project	302	CORD The Necessary Skills Now Network: Integrating Employability Skills Development into Technician Education Across STEM Disciplines
601	Brookdale Community College E-MATE 2.0: Building Capacity for Interactive Teaching and Learning	513	CUNY Borough of Manhattan Community College Fostering Student Success in Cybersecurity and Information Assurance
700	Central Community College Developing Educational Pathways to Credentials in Plastics Engineering Technology	212	CUNY Bronx Community College Chemical and BioEnergy Technology for Sustainability
608	Chemeketa Community College Creating Career Pathways for Manufacturing Systems Technicians	009	CUNY Bronx Community College Pathways to Geospatial Technology and Careers
616	Chippewa Valley Technical College Developing Resources for Enhancing Additive Manufacturing Education	104	Dallas County Community College District, Mountain View College Bridging the Instruction-Industry Divide: Multidisciplinary Approaches to 3D Technology Education and the Future of 3D Technology Certification



Booth #	Alpha by Institution
808	Delaware Technical Community College Technician Training in Gene Editing
701	Del Mar College Unmanned Aircraft Systems Technology Education Consortium (UASTEC)
705	Dordt College Strengthening and Sharing a Holistic Technician Education Program Implemented at a Small, Rural, Private College
509	Eastern Iowa Community College 3D ImPACT: Integrated Project Approach to College Teaching
209	Eastern Shore Community College Creating Technical Scholars: A Model for Structured Pathways
106	East Los Angeles College Filling Skill Gaps through the Geo-Spatial Engineering and Technologies Program
801	Edmonds Community College A Workshop to Improve the Assessment of Professional Development in Technician Education
105	Education Connection Engineering Technology Challenge
208B	Everett Community College Building Equity for Aerospace Training
202	Excelsior College Ensuring Workforce Readiness for the Energy and Manufacturing Industries through Educational Simulations
618	Flathead Valley Community College TeaM SCoRE Biotechnology: Teachers in Montana Strengthening the Continuity of Rural Education in Biotechnology
003	Florence-Darlington Technical College Mentor-Connect – Leadership Development and Outreach for ATE
621	Florida State College at Jacksonville Enhancing the Instrumentation and Control Technician Program: Instrumentation Acquisition
902	Florida State College at Jacksonville Industry 4.0 Technicians in Advanced Manufacturing
607	Forsyth Technical Community College Skills for Biomedical Emerging Technology Applications
910	Front Range Community College Biotech Jumpstart: Building Competency and Career Awareness through Scientific Inquiry
408A	Front Range Community College Building Work Experience for Geospatial Analysts and Technicians

Booth #	Alpha by Institution
703	Gadsden State Community College Automating Alabama's Future: Producing Advanced Automation Technicians
602	Harford Community College Developing an Accelerated Cybersecurity Program Aligned with Workforce Needs
603	Harford Community College Regional Additive Manufacturing Pathways
503	Highline College International Collegiate Cyber Defense Invitational (ICCDI) Competition
101B	International Technology and Engineering Educators Association (ITEEA) A Conference to Support Revisions to the Standards for Technological Literacy
512	Irvine Valley College Optics, Photonics, and Lasers Technical Education Curriculum Development
506	Lake Washington Institute of Technology The Northwest Network for Application Development and Technology Connections (AppConnect NW)
413	Lane Community College Water Advanced Technological Education Resource for Individuals (WATER-I)
409	Lewis-Clark State College Technical Career Pathways for Rural Manufacturing: Using a Sector Approach to Support the Northwest Intermountain Metal Manufacturers (NIMM)
305	Lincoln Land Community College Development of a Competency-Based Education Program in Cybersecurity
010	Lorain County Community College Expanding Educational Opportunities for Nondestructive Testing Technicians
107	Los Angeles Mission College Increasing the Student Biotech Pipeline
303	Louisiana Delta Community College Controlling, Operating, Measuring: Pathways for Learners to Engineering Technology Employment (Project COMPLETE)
508	Macomb Community College The NSF Advanced Technological Education Resource Center for Advanced Automotive Technology
507	Madison Area Technical College Center for Renewable Energy Advanced Technological Education: Energy Storage Project

Booth #	Alpha by Institution
414	Madison Area Technical College Improving the Integration of Supervisory Controls and Data Acquisition (SCADA) Technologies into the Renewable Energy Sector
313	Manhattan Area Technical College Critical Environments Engineering Technology Program
704	McLennan Community College Enhancing Network and Cybersecurity Technician Careers in Collaboration with Industry
408B	Milwaukee Area Technical College Guiding Underrepresented Students to Opportunities in STEM (GUSTO-STEM)
502	Minnesota State College–Southeast Establishing a Rural Advanced Manufacturing Education Hub in the Upper Mississippi River Basin
401A	Missouri State University Worker 4.0: Preparing Students for Today's Technician Careers
210	Mohawk Valley Community College Microcredentialing for the Unmanned Aerial Systems Workforce
800	Monroe County Community College Advanced Welder Education
201A	Montcalm Community College Educating Robot Maintenance and Repair Technicians to Address Workforce Gaps in Automation and Skilled Trades
804	Monterey Peninsula College Marine Advanced Technology Education Support Center
904	Mt. Hood Community College Cooperative Local Internships as a Novel Innovation in Cybersecurity
510	Norco College National Center for Supply Chain Automation
805	Normandale Community College Distance Education and Learning in Vacuum Technology for Employment Readiness (DELIVER)
612	North Central State College Bioscience Technician Expansion Project
411	Northeast Wisconsin Technical College New Approach to Building a Workforce Pipeline for Electro-Mechanical Technician Education
405	North Florida Community College Manufacturing Certifications for Rural High School Students Through Community College Dual Enrollment
610	Northampton Community College Building a Culturally Responsive Degree Program in Information Security

Booth #	Alpha by Institution
201B	North Iowa Area Community College NextGen Technicians: Addressing Industry Demand for Robotics
806	North Orange County Community College District Pathway to Advance Cybersecurity Technician Education
205	Northwest State Community College Cybersecurity Education for Advanced Manufacturing Organizations
206	Northwest State Community College Scaling Elements of a Competency-Based Hybrid Instructional Model into Advanced Manufacturing Courses
213	Old Dominion University Research Foundation Geospatial Technician Education – Unmanned Aircraft Systems (GeoTEd-UAS)
102	Orangeburg-Calhoun Technical College Multidisciplinary Simulation: Educating Advanced Manufacturing and Transportation, Distribution, and Logistics Technicians for a 21st Century Workplace
214	Palomar College Unmanned Aircraft System Operations Technician Education Program (UASTEP)
310	Parkland College Curriculum for Advanced Applicator Technicians
309	Parkland College Unmanned Aerial Systems Technology Curriculum to Meet Industry Demand
605	Pellet Productions, Inc. Increasing ATE Career Placement for Students with Autism Spectrum Disorder (ASD): Identification and Dissemination of Best Practices
606	Pellet Productions, Inc. Preventing Digital Dust: Supporting the Creation and Dissemination of High-Quality Videos for Advanced Technological Education
809	Peralta Community College District Office Building Efficiency for a Sustainable Tomorrow (BEST) Center
905	Piedmont Virginia Community College Central Virginia Advanced Manufacturing Initiative
301A	Pittsburgh Technical College Integrating Software and Machine-Lab Instruction
314	Purdue University MANEUVER: Manufacturing Education Using Virtual Environment Resources
609	Purdue University Troubleshooting and Safety Simulator for Wind Turbine Technician Education

Booth #	Alpha by Institution
101A	Roane State Community College Improving Mechatronics Education by Pairing Mechatronics Courses with General Education Math and Science Courses
903	Rutgers University Pathways into Careers in Information Technology: Community College Student Decision-Making about Academic Programs and Jobs
311	SageFox Consulting Group, LLC Exploring Past Investment in Learning through Grant-Funded Undergraduate Advanced Technology Education Centers
907	Saint Paul College Enhancing Minnesota's Science Technician Workforce
708	Salt Lake Community College Competency-Based, Open-Entry, Open-Exit Biotechnology Education (CBOE-Biotech)
615	Santa Fe College Guitar, Robotics, and Rocketry Projects to Enhance Advanced Technological Education
908	Seattle Community College District Office Aligning Students into Accelerated Pathways in Engineering, Technology, and Building Science
906	Seattle Community College District Office Building a 1+3-Year High School to College Pathway to Prepare Students for High-Demand Jobs in Information Technology
307	Sinclair Community College Bridging the Gap in Automated and Connected Vehicle Technology Education
211	Snow College Strengthening Farms and the Rural Economy through Agricultural Mechanics
308A	South Arkansas Community College Hands-On Technician Training (HoTT)
410	South Louisiana Community College Advancing Technicians in Manufacturing
011	Spokane Community College Northeast Washington Geospatial Environmental Technician Education Project
203	Springfield Technical Community College Problem-Based Learning in Advanced Photonics Manufacturing Education
403	Springfield Technical Community College The Internet of Things Education Project
803B	SUNY College at Buffalo Mentoring, Assessment, and Feedback: A New Approach to MATE ROV Competition Evaluation

Booth #	Alpha by Institution
803A	SUNY College at Buffalo Preparing Future STEM Technicians by Using Assessment as a Teaching and Learning Tool in Course-Based Research at Community Colleges
620	Texas Southmost College Biotechnology Unified Education Network of Opportunities (BUENO) Project
103	Tidewater Community College The SMART Center: Creating the Next Generation of Credentialed, Skilled Technicians for the Maritime and Transportation Industry
810	Trident Technical College Flight Deck Virtual Maintenance Trainer Project
407	Truckee Meadows Community College Advanced Manufacturing and Automation Flexible Delivery
306	Tunxis Community College Professional Development to Enhance Skills of Manufacturing Instructors
412	University of Alaska, Anchorage Campus Alaska Tech Learners: A Collaboration to Teach College Courses in Software Engineering to High School Students
702	University of Alaska Southeast, Juneau Campus Enhancing Aquaculture: Education for Underserved Alaskan Communities to Promote Workforce Development in Fisheries Industries
604	University of Hawaii CyberSecure: Extended Cybersecurity Education, Curriculum, and Workforce Development
402	University of Hawaii Development of a Data Analytics Education Pathway
511	University of Hawaii NSF ATE: Partnership for Advanced Marine and Environmental Science Training for Pacific Islanders
006	University of Missouri–Columbia NSF ARIS Center: Promoting Broader Impacts and Workforce Development in the ATE Community
406	University of New Mexico NM Green: Advancing Sustainable Construction Technology Education
312	University of North Georgia Applying Geospatial and Engineering Technology
611	University of Washington Leveraging Statewide Longitudinal Data to Improve Technical Education Pathways
001	University of Wisconsin–Madison ATE Central

## Booth # Alpha by Institution

- |      |  |
|------|--|
| 008  | University of Wisconsin–Madison<br>Contextualize to Learn: Preparing Faculty Toward<br>Math Contextualization for Student Success in<br>Advanced Technological Education |
| 901  | Utah Valley University<br>Integrating Environmentally Improved<br>Photolithography Technology and Virtual Reality<br>into Advanced Nanotechnology Education              |
| 710  | Valencia Community College<br>Engineering Technology Supply Chain<br>Automation  |
| 308B | Weatherford College<br>Industrial Maintenance Automation Technician<br>Education   |
| 002  | Western Michigan University<br>EvaluATE – Evaluation Resource Center for<br>Advanced Technological Education   |
| 617  | Whatcom Community College<br>The Role of Community Colleges in Cybersecurity<br>Education: Future Directions   |
| 900  | Williston State College<br>Diversifying Technician Education in North Dakota   |
| 404  | Yavapai College<br>Engineered for Success: Engineering Technician<br>Training for Rural Arizona  |
| 208A | Zane State College<br>Improving Success in Math Gateway Courses for<br>STEM Technicians  |

# SHOWCASE SESSION II – ABSTRACTS

Thursday, October 24

ATE Centers and Projects

3:45 – 6:00 pm • Exhibit Hall

## Booth # 001

**University of Wisconsin–Madison**  
*ATE Central*

ATE Central provides services, tools, and an online portal that support, amplify, and highlight the impacts of the ATE community and showcase the valuable curricula, resources, events, websites, and media created by ATE grantees. It also includes a resource archive and comprehensive database of project and center information that encourages use of ATE resources and promotes sustainability of project and center deliverables.

## Booth # 002

**Western Michigan University**  
*EvaluATE – Evaluation Resource Center for Advanced Technological Education*

EvaluATE is the evaluation support center for the National Science Foundation's Advanced Technological Education (ATE) program. We educate the ATE community's evaluators, project leaders and staff, grant specialists, and college administrators about all things evaluation. All of our resources, webinars, newsletters, blogs, and information about the ATE annual survey can be accessed on our website, [evalu-ate.org](http://evalu-ate.org), and all resources are open-access.

## Booth # 003

**Florence Darlington**  
**Technical College**

*Mentor-Connect – Leadership Development and Outreach for ATE*

Mentor-Connect is designed to fill a void for the ATE program; address the fact that there are those in the nation's community colleges who have never been awarded funding from the NSF ATE program; diversify the ATE program overall; better manage a rapidly growing number of requests received by program officers related to grant proposal development and project management; and develop grant writing skills among STEM faculty who lack sufficient grant personnel at their institutions.

## Booth # 004

**CORD**

*HI-TEC – High Impact Technology Exchange Conference*

HI-TEC is a national conference on advanced technological education where technical educators, counselors, industry professionals, and technicians can update their knowledge and skills. Charged with educating America's technical workforce, the event focuses on the preparation needed by the existing and future workforce for companies in the high-tech sectors that drive our nation's economy. HI-TEC uniquely explores the convergence of scientific disciplines and advanced technologies. Join us July 27-30 in Portland, OR for HI-TEC 2020.

## Booth # 005

**CORD**

*ATE 2.0: Preparing Technicians for the Future of Work*

Preparing Technicians for the Future of Work is an initiative designed to facilitate regional collaborations between industry partners and community college educators, within and across disciplines, that will result in transformative changes in associate degree programs to better prepare U.S. technicians for the future workplace. Stop by our booth and learn about upcoming collaboration opportunities. Check out our monthly podcasts, blog series, and more at [www.preparingtechnicians.org](http://www.preparingtechnicians.org).

## Booth # 006

**University of Missouri–Columbia**  
*NSF ARIS Center: Promoting Broader Impacts and Workforce Development in the ATE Community*

The ARIS Center, funded by a \$5.2 million NSF IOA Award, works with educators and engagement practitioners to build capacity, advance scholarship, grow partnerships, and provide resources to help engage with and demonstrate the broader impact of their work in their communities and society. The center's work benefits ATE initiatives that are responsible for driving discovery and promoting partnerships with researchers, community, and commercial stakeholders in the workforce pipeline. The ARIS Center emphasizes support for serving traditionally underserved populations while providing inclusive public engagement to ensure the development of a diverse and highly-skilled technical STEM workforce.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 007

### **Arizona State University**

*Impact of System-Wide Contextualization of Math in Rural Arizona Colleges on Producing More Qualified Technicians (SFAz+8 CXM)*

A collaborative of math and CTE faculty from eight rural Arizona community colleges are working alongside each other to contextualize their math and CTE programs with the shared goal of alleviating the challenges students face in technical math that prevent them from completing their technical credentials.

## Booth # 008

### **University of Wisconsin–Madison**

*Contextualize to Learn: Preparing Faculty Toward Math Contextualization for Student Success in Advanced Technological Education*

Contextualize to Learn is a three-year ATE-funded mixed methods research project led by Dr. Xueli Wang at the University of Wisconsin–Madison. The project explores how two-year college faculty engage with professional development around math contextualization and the effect of contextualization on student outcomes, learning experiences, and motivational beliefs in math and overall educational and career success. The project's guiding frameworks include community of practice and momentum for two-year college student success.

## Booth # 009

### **CUNY Bronx Community College**

*Pathways to Geospatial Technology and Careers*

The Pathways to Geospatial Technology and Careers (PGTC) is a collaborative program that exposes and imparts geospatial skills for students and educators in the New York City region. The PGTC is hosted at the Bronx Community College Geospatial Center of the CUNY CREST Institute which is a multi-million dollar center of excellence that has promoted education and research in geospatial technology since 2010.

## Booth # 010

### **Lorain County Community College**

*Expanding Educational Opportunities for Nondestructive Testing Technicians*

A dynamic partnership including the American Society for Nondestructive Testing, the American Welding Society Foundation, Chattanooga State Community College, the National Center for Welding Education and Training, and Lorain County Community College has received an NSF ATE grant to evaluate and standardize nondestructive testing (NDT) education in academic settings. The grant seeks to increase general NDT awareness and begin laying academic and experience roadmaps for the many career paths of NDT.

## Booth # 011

### **Spokane Community College (SCC)**

*Northeast Washington Geospatial Environmental Technician Education Project*

The Northeast Washington Geospatial Environmental Technician Education project is a partnership between SCC and public schools within our rural service district designed to train and support educators as they implement geospatial technologies. We provide professional development, mentoring and curriculum support within a regionally relevant workforce-oriented context.

## Booth # 101A

### **Roane State Community College**

*Improving Mechatronics Education by Pairing Mechatronics Courses with General Education Math and Science Courses*

This project is focused on pairing mechatronics and general education courses for two-year college students in collaboration with local employers. Completed course pairings will be shared with the NSF ATE community. Lessons learned through the project will be used to integrate the general education curriculum with other career community college programs. The project will increase mechatronics students' completion of the general education portion of their degree program, the number of degreed mechatronics students, and employer satisfaction with graduate's overall skills and abilities.

### **Booth # 101B**

#### **International Technology and Engineering Educators Association (ITEEA)**

*A Conference to Support Revisions to the Standards for Technological Literacy*

This showcase will describe efforts to revise the International Technology and Engineering Educators Association (ITEEA) Standards for Technological Literacy (STL). First published in 2000, the STL has served as a primary resource for states and curriculum developers in K–12 technology and engineering education. Details about the revision process, the project's current status, and planned publication of the revised standards will be presented.

### **Booth # 102**

#### **Orangeburg-Calhoun Technical College**

*Multidisciplinary Simulation: Educating Advanced Manufacturing and Transportation, Distribution, and Logistics Technicians for a 21st Century Workplace*

Project Simul-ATE is a multi-disciplinary approach to educating technicians by using a set of modular, real-world scenarios, developed with input from local industry partners, which incorporate the business, logistics, production, and security sides of automated manufacturing. These scenarios give students working in interdisciplinary teams opportunities to engage with each other as part of an interactive, problem-based learning experience. Students acquire skills in problem-solving, teamwork, and communication, which are highly valued by employers.

### **Booth # 103**

#### **Tidewater Community College**

*The SMART Center: Creating the Next Generation of Credentialed, Skilled Technicians for the Maritime and Transportation Industry*

The SMART (Southeast Maritime and Transportation) Center is proud to be a NSF ATE Center. We are helping transform the future of the maritime and transportation industry with a 21st century trained workforce. We provide students, educators, and employers with career awareness and pathways tools, classroom resources, workshops, and connections with industry leaders. Learn more: [www.maritimetechnology.org](http://www.maritimetechnology.org).

### **Booth # 104**

#### **Dallas County Community College District, Mountain View College**

*Bridging the Instruction-Industry Divide: Multidisciplinary Approaches to 3D Technology Education and the Future of 3D Technology Certification*

The last decade has seen a dramatic advancement of 3D technologies such as 3D printing, 3D scanning and 3D graphics programming. However, curriculum that formally integrates such technologies remains a relatively novel concept and, consequently, related courses and programs are difficult to find. Through interviews with STEM and art faculty members at Mountain View College and conversations with industry partners in the region, we discovered that students can become more competitive to employers if they have a multidisciplinary foundation of hard and soft skills related to 3D technologies and their applications.

### **Booth # 105**

#### **Education Connection**

*Engineering Technology Challenge*

The Engineering Technology Challenge program engages a diverse group of underrepresented students from urban comprehensive high schools in Saturday programs focused on manufacturing technology. The program creates teams of high school students, mentored by community college students, faculty, and industry professionals in industry-driven problem-based learning projects, including the integration of professional skills and teamwork.

### **Booth # 106**

#### **East Los Angeles College**

*Filling Skill Gaps through the Geo-Spatial Engineering and Technologies Program*

This showcase will display study survey data from NSF ATE project activities with community college and K–12 students, professional development workshops, and course curriculum information regarding our Geo-Spatial and Engineering and Technologies program.

### **Booth # 107**

#### **Los Angeles Mission College**

*Increasing the Student Biotech Pipeline*

The goal of this project is to develop new academic pathways in biotechnology leading to stackable certificates and an associate of science degree. These programs will prepare students for jobs in biotechnology. The focus of this showcase is on applying project-based learning in biotechnology classes as well as high school workshops.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 201A

**Montcalm Community College**  
*Educating Robot Maintenance and Repair Technicians to Address Workforce Gaps in Automation and Skilled Trades*

This project will address the ongoing gap in technical education for skilled trades, specifically new high school graduates and women. The move toward automation in manufacturing and skilled trades will open new career opportunities for individuals. This grant will provide funding to meet new employee training demands and validate learning through industry-recognized credentials. To derail the negative stigma associated with manufacturing, curriculum will be developed for a traveling trailer to engage younger students and overcome the challenges of recruitment into automation manufacturing careers.

## Booth # 201B

**North Iowa Area Community College**  
*NextGen Technicians: Addressing Industry Demand for Robotics*

The project at North Iowa Area Community College is designed to increase the number of industrial technicians entering the workforce who are skilled in robotics. An introductory robotics class for Industrial Mechanics and Maintenance (IMM) and Industrial Systems Technology (IST) will address this need. The course will embed a newly-developed stackable credential from the National Coalition of Certification Centers (NC3) and the college will enhance the credential by adding lab courses that feature state-of-the-art robots.

## Booth # 202

**Excelsior College**  
*Ensuring Workforce Readiness for the Energy and Manufacturing Industries through Educational Simulations*

Use of 3D simulations provide students the ability to practice proper procedure in a safe environment, test out multiple scenarios to determine an optimal outcome, and repeat practice to solidify learning.

## Booth # 203

**Springfield Technical Community College**  
*Problem-Based Learning in Advanced Photonics Manufacturing Education*

This project is creating a series of eight multimedia problem-based learning (PBL) modules in partnership with the photonics industry and MIT's AIM Photonics Academy focused on cutting edge photonics applications in advanced manufacturing. We will host two introductory webinars followed by a week-long professional development workshop for STEM educators during summer 2020, with ongoing support during the 2020–2021 academic year. We are also developing a comprehensive student recruitment strategy and will conduct research on the effectiveness of PBL with regard to student learning outcomes and teacher adaptation strategies.

## Booth # 204

**Albany Technical College**  
*Skilled Technical Education and Experiential Learning*

This project is developing and implementing a project-based learning course to prepare students for internship opportunities.

## Booth # 205

**Northwest State Community College**  
*Cybersecurity Education for Advanced Manufacturing Organizations*

This project will create virtual training scenarios that focus on cybersecurity in a manufacturing environment. We hope to create scenarios that will demonstrate how to secure programmable logic controllers (PLC) and human machine interface (HMI) devices. When complete the scenarios will be loaded into the Ohio Cyber Range where they can be used for training by institutions across the state.

## Booth # 206

**Northwest State Community College**  
*Scaling Elements of a Competency-Based Hybrid Instructional Model into Advanced Manufacturing Courses*

Northwest State will show partner colleges across the country how to improve the effectiveness and access of their lecture/lab technical courses by scaling elements of their successful competency-based, hybrid instructional model, and through faculty collaboration using Networked Improvement Communities. Elements of the model include: employer engagement, curriculum alignment, hands-on assessments, lecture moved online, active learning objects, simulations, and virtual machines. A heavy focus is on faculty professional development.



### **Booth # 207**

#### **Asheville-Buncombe Technical Community College**

*Skilled Workers Get Jobs: High School Engagement to Increase Perception of Technology and Engineering Careers*

Building on successful implementation strategies from prior ATE projects, this project focuses on high school personnel. The project seeks to engage students, parents/guardians, and high school personnel to: (1) improve the understanding and perception of technology and engineering careers and educational opportunities in targeted programs, and (2) increase the number and diversity of technicians available for the workforce.

### **Booth # 208A**

#### **Zane State College**

*Improving Success in Math Gateway Courses for STEM Technicians*

We want to equip students with the analytical reasoning skills needed to persevere to degree completion. The project will begin with an in-depth analysis of institutional success data and the review of best practices literature, which will be developed into intense skill workshops for students to prepare for the upcoming semester math course; supplemental instruction including just-in-time corequisite models; and professional development on active learning and contextualization for math. The anticipated outcome is increased student success rates in math gateway courses and an increase in program completion rates.

### **Booth #208B**

#### **Everett Community College**

*Building Equity for Aerospace Training*

The showcase will include a poster that shows our purpose and projected outcomes for the program. We will show our goals and objectives for reaching our outcomes. We will also distribute a one-page handout on our aerospace training program and plans for building equity.

### **Booth # 209**

#### **Eastern Shore Community College**

*Creating Technical Scholars: A Model for Structured Pathways*

The project creates a seamless transition pathway from secondary education to employment in science, technology, engineering, and math (STEM) related fields and high-tech positions.

### **Booth # 210**

#### **Mohawk Valley Community College (MVCC)**

*Microcredentialing for the Unmanned Aerial Systems Workforce*

Establishing and working with an advisory board of stakeholders in the emerging sUAS industry, MVCC has created micro-credentials to rapidly train technicians in the areas of sUAS maintenance, operations and data analysis. Additionally, sustained period and one-time (repeatable) outreach efforts have been developed to increase the pipeline of students from K-12 into engineering and engineering technology programs. Stop by our booth for a flash drive filled with information on the work of this project.

### **Booth # 211**

#### **Snow College**

*Strengthening Farms and the Rural Economy through Agricultural Mechanics*

The economy of rural America is dominated by family farms. Constant changes in technology require for all agriculture producers to keep up with change to be competitive. Snow College's Ag Systems program aligns regional high school pathways to college course work in precision agriculture. Enabling students to gain traditional ag-mechanics skills and up-to-date skills in precision agriculture, UAVs (drones), GIS, and the economics of technology in production agriculture for farm profitability. This showcase will focus on the creation and building of a precision agriculture degree with certificates at a rural community college in central Utah.

### **Booth # 212**

#### **CUNY Bronx Community College**

*Chemical and BioEnergy Technology for Sustainability*

A summer workshop was conducted for students and faculty members to obtain training on a tank reactor to study the kinetics and mass transfer of citric acid and sodium bicarbonate solution. Students were trained to handle organisms, and calculate theoretical and actual yield. These labs will be incorporated into the two new courses developed under the grant: Introduction to Chemical Process and Technology, and Biofuels and Bio Products.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 213

### **Old Dominion University Research Foundation**

*Geospatial Technician Education –  
Unmanned Aircraft Systems  
(GeoTEd-UAS)*

The GeoTEd-UAS project's mission is to provide employers with well-trained UAS operator technicians to meet workforce demand. Thomas Nelson and Mountain Empire Community Colleges, the Virginia Space Grant Consortium, and Virginia Tech are partners. GeoTEd-UAS includes four goals: (1) produce a DACUM for a small UAS operator technician; (2) develop UAS courses and career pathways; (3) provide faculty professional development and mentoring; and (4) provide hands-on UAS activities for high school students.

## Booth # 214

### **Palomar College**

*Unmanned Aircraft System  
Operations Technician Education  
Program (UASTEP)*

UASTEP is focused on developing educational and career pathways for students interested in becoming operators or entrepreneurs in the UAS or drone industry. Led by Palomar College and Southwestern College, this project works with partners from high schools, colleges, universities, and various industry organizations to develop industry-specific UAS coursework and programs. Students who complete our programs will attain UAS operational skills as well as business competencies. This project's workshops and summer camps also seek to foster interest in UAS among college faculty members and high school students.

## Booth # 301A

### **Pittsburgh Technical College**

*Integrating Software and Machine-  
Lab Instruction (ISMI)*

The ISMI project will address the curricular disconnect between high school and college manufacturing classes, the dearth of software-based training received by high school students, and the need for more manufacturing workers trained to use software-based skills in manufacturing environments. The project will address the increasing local, regional, and national demand for workers in the manufacturing sector, specifically the need for manufacturing engineering technicians. The project will also establish a unique model for collaboration between high schools and institutions of higher education.

## Booth # 301B

### **Columbia Basin College**

*Manufacturing the Future –  
Expanding Student Interest in  
Manufacturing Technology Careers*

Partnering with the local high school's Tri-Tech Skills Center, Columbia Basin College will host a hands-on machining academy. The students will use CAD/CAM software for programming and manual machines, handtools, and measuring instruments. We will also host a teacher workshop that provides clock hours, a measuring kit, and a lesson plan. High school students will earn dual credit related to the Precision Machine Technology program. We are creating a direct pipeline from high school to college program—and students are earning certifications in Precision Measuring Instruments and OSHA 10.

## Booth # 302

### **CORD**

*The Necessary Skills Now Network:  
Integrating Employability Skills  
Development into Technician  
Education Across STEM Disciplines*

The Necessary Skills Now Network, an ATE Coordination Network, aims to advance educators and employers' awareness of, access to, and ability to collaborate around employability skills development in support of technician education across the STEM disciplines. Learn more about the Network's faculty development workshops and courses, community of practice, and repository of teaching resources.

## Booth # 303

### **Louisiana Delta Community College**

*Controlling, Operating,  
Measuring: Pathways for Learners  
to Engineering Technology  
Employment (Project COMPLETE)*

Project COMPLETE seeks to expand instrumentation workforce pathways for 500 high school students in North Louisiana. Louisiana Delta Community College and Louisiana Tech University are partnering with high schools in the region to offer a new dual enrollment course that opens students' career options to the high-need field of instrumentation. The project's first year included building collaborative project management processes between the community college and university; developing a high school instrumentation curriculum; growing partnerships with local school boards and industry; and creating a marketing plan and website to attract high school teachers, counselors, students, and parents.

### **Booth # 304**

#### **Community College of Beaver County (CCBC)**

##### *Process Technology: Flexible Entry/ Flexible Exit Curriculum Adaptation*

CCBC will enhance a regionally-distinctive Process Technology (PTEC) program by converting a traditional lecture/lab structure to a flexible entry/flexible exit delivery format to increase student accessibility and the number of credentialed process technicians in the tri-state region (Pennsylvania, Ohio and West Virginia). The flexible entry/flexible exit format permits students to seamlessly enroll in PTEC technical courses at virtually any point in the academic year, complete the courses at their own pace, and increase the amount of time spent dedicated to hands-on technical education.

### **Booth # 305**

#### **Lincoln Land Community College (LLCC)**

##### *Development of a Competency-Based Education Program in Cybersecurity*

The goal of this project is to develop, implement, and evaluate the effectiveness of a cybersecurity certificate delivered through a competency-based education model. The project requires developing courses with built-in competencies, using the current LMS (Blackboard) and existing student admission process, providing professional development for faculty, providing effective services and support to students, and evaluating the benefits to participants and employers.

### **Booth # 306**

#### **Tunxis Community College** *Professional Development to Enhance Skills of Manufacturing Instructors*

This project develops professional development initiatives to assist newly hired manufacturing technicians from industry as well as provides opportunities for current instructors to learn new teaching methodologies in a higher education academic environment. Additionally, the project organizes workshops on essential technical and professional skills for the manufacturing instructors and faculty, as well as provides opportunities for certification in widely used technologies.

### **Booth # 307**

#### **Sinclair Community College** *Bridging the Gap in Automated and Connected Vehicle Technology Education*

This postsecondary faculty professional development project, focused on automated and connected vehicle technology, will create industry-supported workshops and educational resources to academically strengthen postsecondary automotive technician degree programs. The project will also conduct outreach activities in secondary schools to increase the number of high school students who enroll in automotive technology. Project activities are designed to prepare future technicians for a new generation of vehicles that are radically changing the automotive and transportation industries.

### **Booth # 308A**

#### **South Arkansas Community College** *Hands-On Technician Training (HoTT)*

South Arkansas Community College is redesigning three foundational advanced manufacturing courses in process technology and industrial technology and will offer them in a hybrid format. These courses will be part of a new, one-semester Certificate of Proficiency that leads to an entry-level job or can be the foundation on which students can pursue additional coursework. The courses will incorporate competency-based learning outcomes and open labs with industry-specified hands-on activities and assessments. The project addresses industry's need for higher level qualified technicians.

### **Booth # 308B**

#### **Weatherford College** *Industrial Maintenance Automation Technician Education (IMAT)*

The IMAT program expansion project has two main goals: (1) develop and enhance curriculum including expansion of course offerings that will lead to an associates of applied science (AAS) degree, and the development, adaptation, and enhancement of courses that lead to industry-recognized certifications; and (2) develop and enhance the IMAT program to better prepare students through the formation of industry partnerships, the offering of industry internships, faculty professional development, recruitment, and equipment procurement.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 309

### **Parkland College**

*Unmanned Aerial Systems  
Technology Curriculum to Meet  
Industry Demand*

Parkland College is developing Unmanned Aircraft Systems (UAS) courses and certificates to meet the growing need of a rapidly expanding sector. Outreach is being directed towards high schools for UAS implementation in their classrooms as well as efforts towards attracting traditionally underrepresented populations and veterans.

## Booth # 310

### **Parkland College**

*Curriculum for Advanced  
Applicator Technicians*

Ongoing technological advances impact the agriculture field and necessitate curriculum adaptation to match industry employment needs. Advanced application technicians fulfill the role of mixing and/or applying pesticides, herbicides, fungicides, or insecticides. These jobs are a critical component of retail agribusiness organizations and large-scale crop production growers. This project will create four new courses and a two-year AAS degree to prepare students and incumbent workers for careers as advanced applicator technicians.

## Booth # 311

### **SageFox Consulting Group, LLC**

*Exploring Past Investment in  
Learning through Grant-Funded  
Undergraduate Advanced  
Technology Education Centers*

What is the legacy of ATE centers post-funding? The EPILOGUE project is exploring this question by investigating which center-developed ideas, innovations, knowledge, and products continue to evolve, are used, and continue to influence technician education programs post-funding. The lessons learned will hopefully address questions current centers have for their own plans for scaling and sustainability.

## Booth # 312

### **University of North Georgia**

*Applying Geospatial and  
Engineering Technology*

This project seeks to improve the education of engineering and science technicians at the undergraduate level by preparing students to succeed in engineering and science technology professions through associate degree and certificate programs in geospatial and engineering technology.

## Booth # 313

### **Manhattan Area Technical College**

*Critical Environments Engineering  
Technology (CEET) Program*

CEET's focus is to develop a certificate program and an associate degree program to train students to work in building spaces that have critical environments (e.g., laboratories, medical facilities, and production facilities with special environmental requirements). This showcase will focus on the initial vision for the CEET curriculum and program.

## Booth # 314

### **Purdue University**

*MANEUVER: Manufacturing  
Education Using Virtual  
Environment Resources*

Project MANEUVER is developing an affordable virtual reality (VR) framework to address the imminent demand for well-trained digital manufacturing (DM) technicians. This project has a set of MOOC video contents that provides a process for setting up a local VR server, navigating inside a 3D environment, interacting with 3D objects, and simulating CNC machines and different 3D printer models. Using a train-the-trainers approach, a replicable faculty development model is being developed for secondary and postsecondary institutions.

## Booth # 401A

### **Missouri State University**

*Worker 4.0: Preparing Students  
for Today's Technician Careers*

The Worker 4.0 project addresses the critical advanced manufacturing workforce shortage in South Central Missouri and North Central Arkansas. Our curricular design using stackable courses and latticed options in advanced industrial maintenance, manufacturing, and alternative energy focuses on the education of middle-skill industrial maintenance technicians. This innovative combination of curriculum and project-based learning uses hands-on computer simulation, a lab environment that resembles a real-world industrial environment, and internships as well as registered apprenticeships to build workforce readiness in a critical need area identified by our industry partners.

### **Booth # 401B**

#### **Ana G. Mendez University– Cupey Campus**

*Responding to Post-Hurricane  
Maria Needs for Electronics and  
Photonics Technicians in  
Puerto Rico*

Industry demand in Puerto Rico for well-prepared technicians in the fiber optics and photonics fields has increased after the collapse of all basic services brought by Hurricanes Irma and Maria in September 2018. STEM technicians in these fields are critical for the reconstruction and maintenance of the communication infrastructure and for the support of optical-based processing and quality control systems used in the manufacturing, medical devices, security, metrology, and pharmaceutical industries. We aim to offer a more flexible, industry-validated AAS program with certificate options, educating students who are proficient in optics, lasers, fiber optics, electronics, and quality control.

### **Booth # 402**

#### **University of Hawaii**

*Development of a Data Analytics  
Education Pathway*

The Data Analytics Education program in the University of Hawaii System offers intercampus articulation between programs focusing on artificial intelligence, deep learning, machine learning, and data analytics. Building on a partnership between Honolulu Community College and the University of Hawaii at Manoa's Flagship Campus Shidler College of Business, the program offers an AAS and certificate in data analytics, a bachelor of business administration in Information Technology Management/Management Information Systems, and a Master of Science in Information Systems with a business intelligence, data analytics, and information security education pathway, which will launch in Fall 2020.

### **Booth # 403**

#### **Springfield Technical Community College**

*The Internet of Things  
Education Project*

This project will develop curricula for an IoT systems field technician certificate, provide professional development opportunities to faculty, and expose students to IoT-based STEM applications during summer workshops. Targeted IoT application areas will include: industrial IoT (Industry 4.0), e-healthcare, autonomous vehicle technology, and the overarching topic of IoT cybersecurity.

### **Booth # 404**

#### **Yavapai College**

*Engineered for Success:  
Engineering Technician Training  
for Rural Arizona*

This program was designed to provide engineering technicians to underserved businesses in rural Arizona through technical training, recruitment, internships, and certifications.

### **Booth # 405**

**North Florida Community College**  
*Manufacturing Certifications for  
Rural High School Students through  
Community College  
Dual Enrollment*

North Florida College located in rural Madison, Florida has developed an advanced manufacturing program focused on providing dual-enrollment opportunities to high school students. This program has created career pathways that lead from local high schools to the community college to employment as technicians. The team uses hands-on summer camps to expose potential students to robotics, pneumatics/hydraulics, electronics, programmable logic controllers, CNC, 3D printing, and advanced manufacturing employment opportunities through industry tours with participating workforce partners.

### **Booth # 406**

#### **University of New Mexico**

*NM Green: Advancing Sustainable  
Construction Technology Education*

The goal of this project is to produce more technicians qualified for jobs in green construction. Key activities include a certificate program in green construction technologies; development of a pipeline of students focused on green construction technology including an internship program and development of a dual-credit course; and activities to expose and attract underrepresented students to STEM fields.

### **Booth # 407**

#### **Truckee Meadows Community College**

*Advanced Manufacturing and  
Automation Flexible Delivery*

The Advanced Manufacturing and Automation Flexible Delivery program allows Truckee Meadows Community College students to complete course readings, view videos of lectures, and take quizzes online, and then attend open labs on campus at their convenience. Our showcase will allow you to preview some of our videos and see how our courses have been set up to maximize convenience for our students.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 408A

**Front Range Community College**  
*Building Work Experience for Geospatial Analysts and Technicians*

The Geospatial Centroid at Front Range Community College (FRCC) is a novel approach to developing a highly-skilled, diverse geospatial technician workforce in northern Colorado. In this small ATE project, FRCC will construct a seamless academic and career pathway for high school and adult students to become geospatial technicians. The Centroid will offer 20 FRCC students per year an opportunity to work on real-world geospatial projects with six partners, including TerraView, Colorado State University, and the GeoTech Center, to sharpen students project management and critical thinking skills.

## Booth # 408B

**Milwaukee Area Technical College**  
*Guiding Underrepresented Students to Opportunities in STEM (GUSTO-STEM)*

GUSTO-STEM seeks to increase the numbers of graduates of the chemical technician program(s) at the Milwaukee Area Technical College. This grant seeks to meet industry's unmet needs for qualified chemical technicians and provide the students we serve with family supporting jobs. Our approach is three pronged: 1) recruitment, 2) wrap around retention services, and 3) direct industrial involvement for soft-skills development and possible job placement.

## Booth # 409

**Lewis-Clark State College**  
*Technical Career Pathways for Rural Manufacturing: Using a Sector Approach to Support the Northwest Intermountain Metal Manufacturers (NIMM)*

Education and manufacturing combined to create a new process to educate and prepare high school students for employment in the metal manufacturing industry including engagement with skills, manufacturers, and hands-on learning.

## Booth # 410

**South Louisiana Community College**  
*Advancing Technicians in Manufacturing*

This showcase will include a powerpoint presentation of equipment labs, student interaction, and project details, as well as curriculum handouts.

## Booth # 411

**Northeast Wisconsin Technical College (NWTC)**  
*New Approach to Building a Workforce Pipeline for Electro-Mechanical Technician Education*

NWTC is addressing the need for upskilling those currently working in manufacturing. This project is working to encourage pathways from an industrial maintenance certificate to an associate degree in electro-mechanical to increase employee talent in area businesses. This is being done by holding recruiting events, and using a mobile lab for on-campus follow-up visits. Once students are enrolled, orientation sessions are held to help acquaint them with the college, tech hall, and technology used in their classes. In addition, hands-on activities and curriculum is being developed to enhance the learning of returning adults.

## Booth # 412

**University of Alaska, Anchorage Campus**  
*Alaska Tech Learners: A Collaboration to Teach College Courses in Software Engineering to High School Students*

Alaska Tech Learners supports high school teachers who lead dual-enrollment courses in e-commerce and mobile application development. A shared teaching model uses course content provided by the university faculty as the basis for local, facilitated instruction that is led by the high school teacher. The high school grading is determined by the high school teacher and the university grade is determined by the university faculty. Courses are offered during the school year and at summer camps for both teachers and students.

## Booth # 413

**Lane Community College**  
*Water Advanced Technological Education Resource for Individuals (WATER-I)*

The WATER-I project takes CTE education out of the classroom/lab to an online instructional environment, But wait, don't CTE programs require hands-on activities so students can learn by doing? Right, they do! WATER-I accomplishes the CTE program practical experience requirement by enlisting industry practitioners that we call fieldwork mentors. Fieldwork mentors typically come from water supply utilities that have water conservation staff members who volunteer their time to work with our students when there is a course lab project to complete. We launched our first online cohort in fall 2019.

### **Booth # 414**

**Madison Area Technical College**  
*Improving the Integration of Supervisory Controls and Data Acquisition (SCADA) Technologies into the Renewable Energy Sector*

SCADA technology is of crucial importance to the electric industry to manage the extraordinary growth in renewable energy installations. SCADA data analytics allow for system optimization, preventive maintenance scheduling, and rapid correction of faults and alarms to prevent or minimize system downtime. This showcase will show how SCADA systems allow engineering technicians to control systems in real time and log data for monitoring of system performance, and invite faculty leaders to integrate SCADA into existing energy technician programs.

### **Booth # 501**

**Alamance Community College**  
*Mechatronics Technology Institute*

Alamance Community College has partnered with local high schools and advanced manufacturing industries in North Carolina to prepare a qualified mechatronics-trained workforce through an initiative called the Mechatronics Technology Institute (MechTech Institute). The goal of the MechTech Institute is to build a mechatronics workforce pipeline by increasing the awareness of, and preparation for, opportunities in mechatronics of local high school students by training local high school instructors and counselors to help their students to take advantage of the opportunities in mechatronics.

### **Booth # 502**

**Minnesota State College – Southeast**  
*Establishing a Rural Advanced Manufacturing Education Hub in the Upper Mississippi River Basin*

Minnesota State College Southeast will establish advanced manufacturing education hubs in four to six regional rural high schools through deployment of a 13-credit Prototype Engineering dual enrollment certificate program. Funding will provide equipment for the high school hubs such as 3D printers, CAD/CAM software, and CNC machining. A team of educators, industry members, and community members will be formed to support the initiative. Specific recruitment strategies for underrepresented populations will be developed.

### **Booth # 503**

**Highline College**  
*International Collegiate Cyber Defense Invitational (ICCDI) Competition*

The ICCDI was created as a collaborative event over multiple time zones. The student teams in Seattle and Windhoek, Namibia, help each other towards a common goal while protecting their networks. The scenario this year had the students using block chain technology to raise money to save the world as the Earth was about to be hit by an asteroid. The infrastructure was designed and built by AAS and BAS students at Highline College. They had to develop the scenario and network design, install all of the operating systems, test the business injects, and verify that everything worked. In addition, they wrote the scoring rubrics and served as judges.

### **Booth # 504**

**College of the Canyons**  
*Advanced Technological Education for 2-Year Colleges (ATE-2YC)*

The project convenes proposal writing workshops and follow-on mentoring for two-year college STEM faculty. The project addresses barriers faced by two-year colleges. The workshops and mentoring by experienced ATE PIs strengthen institutional capacity to pursue NSF support. The outcomes include an increase in the number of competitive ATE proposals submitted by two-year colleges and a stronger STEM grant-writing culture.

### **Booth # 505**

**Baker College of Flint**  
*Advancing Photonics and Laser Technician Education in Michigan*

Photonics and laser technology continues to grow and play a key role in multiple sectors of the economy. This showcase will present the work done at Baker College to expand the education of photonics and laser technicians in the state of Michigan. This includes developing new curriculum describing current photonics applications, adding laboratory infrastructure in advanced laser applications, and working with other colleges in the state to support the introduction of photonics courses in their curriculum.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 506

### **Lake Washington Institute of Technology**

*The Northwest Network for Application Development and Technology Connections (AppConnect NW)*

AppConnect NW is a network of seven community and technical colleges in the Seattle area offering applied bachelor's degrees in Software and Application Development. Faculty are collaborating across colleges to build stronger relationships with the local technology industry, coordinate K–12 outreach efforts, and update curriculum to meet industry standards.

## Booth # 507

### **Madison Area Technical College**

*Center for Renewable Energy Advanced Technological Education: Energy Storage Project*

The CREATE Energy Storage Project employs a proven, evidence-based, international collaboration model, which gathers global knowledge and expertise to produce an energy storage job task analysis, industry validated curriculum, and instructional materials. The project will equip a model teaching laboratory that will serve as a platform for testing new curriculum, and be used to educate faculty from across the country through professional development workshops designed to strengthen energy education across the nation.

## Booth # 508

### **Macomb Community College**

*The NSF Advanced Technological Education Resource Center for Advanced Automotive Technology (CAAT)*

CAAT creates curriculum in advanced automotive technology areas, including connected and autonomous vehicles, which is free for download at: [www.autocaat.org](http://www.autocaat.org). CAAT also provides professional development opportunities through its annual conference and conducts numerous STEM activities and outreach events to middle and high school students.

## Booth # 509

### **Eastern Iowa Community College**

*3D ImpACT: Integrated Project Approach to College Teaching*

3D ImpACT is an integrated teaching approach to increase the number of skilled workers in additive manufacturing through curriculum development; an integrated, project-based capstone course (welding, computer numeric control machining, mechanical design technology, logistics, information technology, and engineering technology); and professional development for faculty.

## Booth # 510

### **Norco College**

*National Center for Supply Chain Automation*

The National Center for Supply Chain Automation works to increase the number of highly-skilled supply chain technicians in the U.S. workforce.

## Booth # 511

### **University of Hawaii**

*NSF ATE: Partnership for Advanced Marine and Environmental Science Training for Pacific Islanders*

STEM enhancement activities from the five Pacific Island regional community colleges (American Samoa Community College, the College of the Marshall Islands, the College of Micronesia- FSM, Northern Marianas College and Palau Community College) will be presented.

## Booth # 512

### **Irvine Valley College**

*Optics, Photonics, and Lasers Technical Education Curriculum Development*

Lake Washington Institute of Technology (LWTech) serves the the Open Educational Resources (OER) development lead for the Optics, Photonics, and Lasers Technical Education Curriculum Development project. Learn about the work we have done to train and support faculty members across our institution as they move to use of OER. Access our online OER projects site and hear more about our next steps for OER development in advanced manufacturing. Discover a model you can follow when doing similar work with OER at your institution, even if your resources are limited.



### **Booth # 513**

#### **CUNY Borough of Manhattan Community College**

##### *Fostering Student Success in Cybersecurity and Information Assurance*

The project will create a concentration in cybersecurity in each of the two AAS degree programs of Computer Network Technology (CNT) and Computer Information Systems (CIS). Working with high schools, senior colleges, ATE centers in cybersecurity, and the industry, the project team will adapt and implement exemplary educational materials and pedagogical strategies aimed at expanding opportunities for minority and underrepresented students to pursue careers in cybersecurity and information assurance.

### **Booth # 514**

#### **City College of San Francisco**

##### *Growing CTE/STEM Teachers & Makerspace*

How is the NextGen K–14 STEM and CTE teacher shortage being addressed? At CCSF, our project is developing innovative strategies to boost the number and diversity of students entering the field. Showcase visitors will learn about our Teacher Prep Center, which offers advising, pathways, and transfer support; and a key strategy of makerspaces for curriculum innovation for hands-on learning in CTE and STEM. Two complementary California regional efforts for teacher prep and makerspaces will also be shared.

### **Booth # 601**

#### **Brookdale Community College**

##### *E-MATE 2.0: Building Capacity for Interactive Teaching and Learning*

This work is developing classroom-ready interactive content to support courses in networking, cybersecurity, environmental science, chemistry, and physics. The model engages internal subject matter experts (SMEs) at Brookdale Community College, external SMEs and instructional designers. These “interactives” explain complex, abstract or dynamic concepts using analogies, animation and interactivity. The SMEs discuss and storyboard topics and collaborate with instructional designers via bi-weekly Zoom video conferences to test and refine the interactive materials. Content is developed using HTML5 and therefore available for virtually any device running a modern web browser.

### **Booth # 602**

#### **Harford Community College**

##### *Developing an Accelerated Cybersecurity Program Aligned with Workforce Needs*

This project recognizes the critical importance of effectively, and quickly—without sacrificing quality—preparing a skilled workforce who can detect, investigate, and prevent cybersecurity breaches in business, industry, and government. Harford is offering an accelerated AAS beginning fall 2019. This program will run in cohorts with a mix of online and hybrid courses. The program can be completed in 17 calendar months versus the traditional 24 months. Curriculum in two core courses in the program will be competency-based education (CBE) which seeks to improve efficiency of learning and achievement of learner improvement. It is believed the CBE will produce a more qualified cyber workforce.

### **Booth # 603**

#### **Harford Community College (HCC)**

##### *Regional Additive Manufacturing Pathways (RAMP)*

RAMP is a manufacturing partnership of Maryland, local public schools, Aberdeen Proving Ground, the National Resource Center for Materials Technology Education (MatEdU), and other manufacturing partners. RAMP addresses the need of educated technicians in the growing additive manufacturing (AM) field. RAMP will develop and sustain a pipeline of AM technicians through outreach to rural secondary school students, professional development for two-year college faculty, HCC secondary students, and AM certificate programs.

### **Booth # 604**

#### **University of Hawaii**

##### *CyberSecure: Extended Cybersecurity Education, Curriculum, and Workforce Development*

The University of Hawaii Maui College has a cybersecurity program that spans multiple disciplines and provides cybersecurity education to a wide spectrum of students. The NSF ATE award has allowed the Applied Business and Information Technology (ABIT) baccalaureate program to achieve the CAE-CDE designation. This showcase highlights the curriculum and offerings of the ABIT BAS program.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 605

### **Pellet Productions, Inc.**

*Increasing ATE Career Placement for Students with Autism Spectrum Disorder (ASD): Identification and Dissemination of Best Practices*

Stairway to STEM (STS) is an online resource for autistic students, their parents, and postsecondary STEM instructors. Our mission is to help students on the autism spectrum realize their capacity for success as they transition to collegiate STEM environments and beyond, as well as to build their confidence, resilience, and self-efficacy. By and for students with autism, STS has more than 145 blogs, videos, interviews, and podcasts, as well as three free eBooks available on the site.

## Booth # 606

### **Pellet Productions, Inc.**

*Preventing Digital Dust: Supporting the Creation and Dissemination of High-Quality Videos for Advanced Technological Education*

Learn the foundational skills necessary to develop, produce, edit, disseminate, and archive your own video content.

## Booth # 607

### **Forsyth Technical Community College**

*Skills for Biomedical Emerging Technology Applications*

Skills for Biomedical Emerging Technology Applications (BETA skills) will focus advanced technological education around convergent technology platforms that support product research, development and/or manufacturing at the interface between biomedical devices and tissue engineering. The project objectives are to define core BETA skills for national use by educators, researchers, and employers; and to connect BETA competencies to the emergence of technician specialists with a new, higher-level set of specialized core skills.

## Booth # 608

### **Chemeketa Community College**

*Creating Career Pathways for Manufacturing Systems Technicians*

The project spent its first full project year researching and developing curriculum for the food and beverage industry. Local wineries, breweries, and food processing plants are in need of upskilling their current labor force and encouraging new graduates to enter their industry.

## Booth # 609

### **Purdue University**

*Troubleshooting and Safety Simulator for Wind Turbine Technician Education*

An interactive 3D simulator has been developed for wind turbine technician education. Students navigate a virtual wind farm to complete realistic troubleshooting scenarios while building their troubleshooting skills and practicing safe behaviors onsite. The simulator provides a library of scenarios as well as a tool for instructors to build customized scenarios to better suit their existing curriculum.

## Booth # 610

### **Northampton Community College**

*Building a Culturally Responsive Degree Program in Information Security*

This project provides a model to recruit and retain underrepresented students for cybersecurity fields by improving learning content and context. This project will serve as a foundational model for building cultural competence in the cybersecurity program and other academic programs. This project identifies a holistic approach to connecting the entire educational experience to underrepresented students in ways that are relevant to their lives and to the needs of the workforce. We will demonstrate how to create a culturally competent program and keep it running effectively. Moreover, we will identify means to assess the extent to which culture can improve academic success.

## Booth # 611

### **University of Washington**

*Leveraging Statewide Longitudinal Data to Improve Technical Education Pathways*

This research project capitalizes on unique and advantageous circumstances in Washington that enable postsecondary educators and employers to collaboratively use the state's longitudinal data system (LDS) to improve technician programs and technical education pathways. By integrating the LDS with system, institutional, and program data in ways not yet attempted in Washington or other states, this project will research, implement, and scale data-driven program improvement processes to strengthen technical workforces throughout Washington and model and disseminate these practices nationally.

### **Booth # 612**

#### **North Central State College**

##### *Bioscience Technician Expansion Project*

The Bioscience Technician Expansion Project aims to supply a stronger biotechnology workforce to the North Central State College service area. By only offering day classes, the program had limited availability to a key student population. We are expanding the program to offer hybrid courses during the evening to meet the local, growing demand for jobs. This showcase will share the progress of program transformation to offer an evening hybrid curriculum in the biotechnology field.

### **Booth # 613**

#### **Coastline College**

##### *Cyber Up! Digital Forensics and Incident Response Project*

In an effort to meet the needs of the future cybersecurity workforce and current industry demand for cybersecurity professionals, Coastline College is developing an Associate of Science in Digital Forensics and Incident Response (DFIR) program. This project leverages advisory board feedback from industry, academia, and government agencies along with course development using appropriate frameworks and models such as NICE CWF work roles, CyberSeek, and SANS GIAC Certifications to develop a DFIR program that reduces the cybersecurity skills gap and helps to build the future cyber workforce.

### **Booth # 614**

#### **Allan Hancock College**

##### *Creating Precision Agriculture and Crop Protection Career Pathways via Industry Partnerships*

This project focuses on curriculum development for programs in crop protection, pest control adviser preparation, and precision agriculture. Community, high school, and industry outreach has resulted in positive effects on program enrollment.

### **Booth # 615**

#### **Santa Fe College**

##### *Guitar, Robotics, and Rocketry Projects to Enhance Advanced Technological Education (GRRATE)*

The GRRATE project introduces often underrepresented students, including minority, low-socioeconomic, rural, and female students, to the possibility of high paying, rewarding careers in STEM. The project created the Wide World of Science course to be offered at three rural education centers in Starke, Keystone Heights, and Archer, Florida. This interdisciplinary course will use culturally responsive pedagogy and project-based learning to expose students to the scientific method, research and analysis, technology, engineering, and math.

### **Booth # 616**

#### **Chippewa Valley**

#### **Technical College**

##### *Developing Resources for Enhancing Additive Manufacturing Education*

This project has designed a Kara Learning machine by CAD system and manufactured it using 3D printing technology. This showcase includes a one-page handout for display and sharing purposes.

### **Booth # 617**

#### **Whatcom Community College**

##### *The Role of Community Colleges in Cybersecurity Education: Future Directions*

This project will offer a conference to determine the state of cybersecurity education in 2020, particularly for community colleges, and to identify challenges, opportunities, and an action plan for the future. This is a follow up to the 2002 conference, *Protecting Information: The Role of Community Colleges in Cybersecurity Education*.

### **Booth # 618**

#### **Flathead Valley**

#### **Community College**

##### *TeaM SCoRE Biotechnology: Teachers in Montana Strengthening the Continuity of Rural Education in Biotechnology*

The TeaM SCoRE Biotechnology project promotes Flathead Valley Community College's biotechnology program through professional development workshops in biotechnology methods for secondary educators in Montana. This showcase will demonstrate how Montana high school teachers are building their students' awareness of biotechnology careers through engaging project-based laboratory activities.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 619

### **Coastal Alabama Community College**

*The Associate of Applied Science in Dynamic Reality Technologies Program: Training Technicians to Use Extended Reality to Develop Workforce Training Simulations*

Coastal Alabama Community College, four corporations, and one industry association have collaborated to develop an AAS in Dynamic Reality Technologies program. By harnessing imagination, human perception, and the combined power of virtual reality (VR/AR/MR) hologram technologies, the AAS-Dynamic Reality Tech Program will provide students with the skills and knowledge to work as technicians in developing training VR/AR/MR-based simulations and use of these systems in practical employee training applications in all industry sectors.

## Booth # 620

### **Texas Southmost College** *Biotechnology Unified Education Network of Opportunities (BUENO) Project*

The BUENO project is focused on building the first biotechnology program in the Lower Rio Grande Valley. In our first year, we developed biotech modules for biology labs, designed and taught summer camps for middle and high school students, and held a teacher workshop. The BUENO project showcase will highlight these activities, as well as present information on the development of our biotechnology program.

## Booth # 621

### **Florida State College at Jacksonville**

*Enhancing the Instrumentation and Control Technician Program: Instrumentation Acquisition*

This showcase will outline the progress we have made in securing industry support, equipment, and curriculum development in the area of instrumentation technology.

## Booth # 700

### **Central Community College** *Developing Educational Pathways to Credentials in Plastics Engineering Technology*

In a close partnership with area business and industry and in direct response to their workforce needs, this Plastics-Related, Innovative Manufacturing Education (PRIME) project proposes to enhance Central Community College's Advanced Manufacturing Design Technology program offerings through the development of plastics engineering technology education. PRIME enhances existing mold making courses and expands on the foundational knowledge of advanced manufacturing by focusing on the science and engineering behind plastics manufacturing, e.g., process techniques, quality assurance, and plastic materials.

## Booth # 701

### **Del Mar College** *Unmanned Aircraft Systems Technology Education Consortium (UASTEC)*

The UASTEC project provides free UAS curriculum materials to educators and trainers under the Creative Commons 4.0 license.

## Booth # 702

### **University of Alaska Southeast, Juneau Campus** *Enhancing Aquaculture: Education for Underserved Alaskan Communities to Promote Workforce Development in Fisheries Industries*

The University of Alaska Southeast (UAS) Fisheries Technology (Fish Tech) program offers a hands-on, semester-intensive program to prepare students for entry-level aquaculture and hatchery technician positions. Students learn about basic aquaculture techniques, salmon biology, skiff operation, outboard engine repair, and more. The program is based out of Sitka, Alaska, which is the headquarters of three unique hatcheries, and the UAS Sitka campus. The UAS Fish Tech program is unique from many university programs in that the curricula was written and is continually updated with input from industry partners to prepare our graduates for employment in fisheries industries.

## Booth # 703

### **Gadsden State Community College** *Automating Alabama's Future: Producing Advanced Automation Technicians*

Alabama has become a manufacturing hub for the automotive, aerospace, and aviation industries. Technological advances in recent years are changing Alabama's manufacturing industry. The number of jobs for technicians in the advanced manufacturing industry is growing rapidly, and there is shortage of skilled workers to fill this need. The goal of this project will be to develop an advanced mechatronics program that has an integrated lab component to prepare highly skilled technicians in advanced manufacturing. The curriculum will offer two new short-term programs leading to advanced certificates in mechatronics and robotics.

### **Booth # 704**

**McLennan Community College**  
*Enhancing Network and  
Cybersecurity Technician Careers in  
Collaboration with Industry*

Working with industry and 31 school districts, this project has integrated cybersecurity into current pathways. We have developed multiple entry and exit points providing critical technical and employability skills. We are developing materials to provide community outreach to promote cyber opportunities through awareness programs, and are offering training to high school and college faculty, and advisers.

### **Booth # 705**

**Dordt College**  
*Strengthening and Sharing a  
Holistic Technician Education  
Program Implemented at a Small,  
Rural, Private College*

Pro-Tech degrees at Dordt College (Sioux Center, IA) offer a holistic technician education that builds strong technical abilities on a foundation of cross-contextual skills, character traits, and core values. The innovative Manufacturing and Agriculture Operations degrees—which feature paid internships, two full days per week—are being strengthened by adapting proven materials from ATE-funded projects and centers.

### **Booth # 706**

**Bristol Community College**  
*The New England Water Treatment  
Training (NEWTT) Project*

The NEWTT project's goal is to prepare the next generation of drinking water and wastewater operators through curriculum development and distribution, construction of a model laboratory training facility, development of an educational pipeline from high school to careers, recruitment of underrepresented populations and veterans, and the lending of equipment to help develop new programs.

### **Booth # 707**

**Atlantic Cape Community College**  
*Unmanned Aircraft Systems  
Operations and Maintenance  
Education and Training Project*

This project aims to advance technician education and training in the rapidly evolving and critically important field of small commercial unmanned aircraft systems (UAS). This project plans to develop a curriculum for a new academic program that will prepare students to work as technicians in the operation, maintenance, and repair of small UAS.

### **Booth # 708**

**Salt Lake Community  
College (SLCC)**  
*Competency-Based, Open-Entry,  
Open-Exit Biotechnology Education  
(CBOE-Biotech)*

The biotechnology program at Salt Lake Community College switched to a competency-based, hybrid, open lab education (CBOE) format in fall 2018. Students access lecture-type material online, and complete lab experiments and assessments in the open lab when it suits the student's schedule. Faculty must therefore be ready to assist students who are at any point in the program at any time. The model has been successful, but is not without challenges. Prior to implementation in 2018, enrollments were low and declining, but the new format has seen a three-fold increase in the number of students, and 78 percent of CBOE-Biotech students agree that more courses at SLCC should adopt CBOE.

### **Booth # 709**

**College of the Florida Keys**  
*Developing a 21st Century Training  
Program in the Florida Keys for  
Renewable Alternative Energy  
Technology: Wind, Solar, and  
Tidal Power*

As our climate changes and our seas become more acidic, at no time in human history has the need to transition from fossil fuels to renewable energy been greater. Being in one of the sunniest and windiest places in the nation and surrounded by immense ocean currents, the Florida Keys are awash with renewable energy resources and therefore ideally suited for research and training of renewable energy technicians. The renewable energy program focuses on wind, solar, and hydrokinetic power technician training, especially as it pertains to offshore energy production and hybrid systems.

### **Booth # 710**

**Valencia Community College**  
*Engineering Technology Supply  
Chain Automation*

The goal of this project is to develop a supply chain automation technician specialization under the engineering technology AS degree curriculum frameworks for the Florida Department of Education. There are three objectives: (1) develop and implement the new curriculum frameworks and develop the Supply Chain Automation specialization to be offered in the 2021 fall term; (2) provide professional development training for secondary and postsecondary instructors who teach courses related to supply chain automation and manufacturing; (3) develop a high school pathway program into the degree program and raise awareness among underrepresented and minority students.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 800

### **Monroe County Community College** *Advanced Welder Education*

ATE grant funding is being used to establish a partnership between K–12, secondary, and nonprofit equivalents with Monroe County Community College (MCCC). The goal is to articulate course work at the secondary level to conform with the American Welding Society standards with MCCC's AAS degree welding program. The booth will display curriculum materials developed to date, future workshop opportunities, and a proposed articulation pathway.

## Booth # 801

### **Edmonds Community College** *A Workshop to Improve the Assessment of Professional Development in Technician Education (FAS4ATE2)*

FAS4ATE2 builds on the professional development formative assessment system developed in the FAS4ATE project (2013–2016) and is a joint partnership between Edmonds Community College, the University of Melbourne, and the University of Western Michigan. The goal is to refine, test, and validate a toolbox of resources designed to bolster the assessment of professional development programs and their eventual impact on students. Following a series of online training sessions throughout 2019–2020, the project will culminate with a day-long workshop before the 2020 ATE PI conference.

## Booth # 802

### **Community College of Allegheny County** *Advancing Mechatronics Technician Education*

In the western region of Pennsylvania, there are growing needs for skilled technicians in advanced manufacturing and energy companies. To help address this situation, this project will work with industry partners and community organizations to develop courses in new technology areas and expand the college's associate degree program in mechatronics. This program expansion into areas of industrial growth will serve as a model for the benefits of integrating industry certification with academic coursework. The project will help increase the number of technicians with skills needed for the workforce in the western Pennsylvania region and the nation.

## Booth # 803A

### **SUNY College at Buffalo** *Preparing Future STEM Technicians by Using Assessment as a Teaching and Learning Tool in Course-Based Research at Community Colleges*

As course-based undergraduate research experiences (CUREs) expand at community colleges, it becomes increasingly important to assess student learning gains. We are developing a method for evaluating CUREs by modifying EvaluateUR, an approach developed for independent research that has 11 outcome categories, each defined by three to four components. Each component is scored by the student and mentor and designed to help students understand their academic strengths/weaknesses and build metacognitive skills. A statistical package allows faculty to obtain summary data for course outcome components and will help them document student learning gains and revise courses to further improve student learning.

## Booth # 803B

### **SUNY College at Buffalo** *Mentoring, Assessment and Feedback: A New Approach to MATE ROV Competition Evaluation*

This project is empowering students who participate in MATE ROV competitions to: identify knowledge and skills gained through this activity; see areas for improvement; and use this knowledge as they continue their education and/or prepare to enter the workforce. The project also supports faculty advisors and provides reliable feedback to MATE about the academic value of the competitions. This project builds on EvaluateUR, developed at SUNY Buffalo State and supported by NSF's WIDER program. EvaluateUR provides data measuring student outcomes that include both content knowledge and skills critically important in the workplace.

## Booth # 804

### **Monterey Peninsula College** *Marine Advanced Technology Education (MATE) Support Center*

The MATE Center uses marine technology to improve STEM education and the workforce through: underwater robotics competitions; at-sea internships; professional development for educators focusing on marine engineering and technology; SeaMATE, a student-run online store selling underwater robotics kits and textbooks; conducting workforce studies; and partnering with like-minded educational institutions, employers, and professional societies.

### **Booth # 805**

#### **Normandale Community College** *Distance Education and Learning in Vacuum Technology for Employment Readiness (DELIVER)*

Normandale Community College offers a credential in vacuum technology that can be completed by students at distance locations. The Vacuum Technology certificate consists of four courses. The first course in the sequence is delivered fully online. Subsequent courses are each delivered in a telepresence classroom. The telepresence classroom facilitates the ability to support hands-on learning activities performed by all students even at the distance locations. A total of 10 individuals from a location in California have earned a certificate during this project.

### **Booth # 806**

#### **North Orange County Community College District** *Pathway to Advance Cybersecurity Technician Education (PACE)*

PACE is a guided cybersecurity pathway with the following specific goals: (1) leverage existing technology and stakeholder relationships to establish a comprehensive cybersecurity pathway from middle school to four-year institutions with a number of exit points, (2) provide high quality professional development programs to encourage visible, fun, and popular activities designed to improve student matriculation, persistence, and graduation, and (3) leverage existing technology and business/industry relationships to improve the number and quality of applicants for high paying cybersecurity careers.

### **Booth # 807**

#### **Bemidji State University** *Minnesota State Advanced Manufacturing Center of Excellence – ATE Regional Center*

The Minnesota State Advanced Manufacturing Center of Excellence is an ATE Regional Center. The center's mission is to build a pipeline of qualified technicians for advanced manufacturing. The center offers a seamless career pathway for high school students and workers through 360 eTECH, career learning modules, digital badging, and youth outreach through Dream It. Do It. Minnesota. The center is a consortium of 18 two-year community and technical colleges, led by Bemidji State University.

### **Booth # 808**

#### **Delaware Technical Community College** *Technician Training in Gene Editing*

This program is a collaborative project between Delaware Technical Community College (DTCC) and the Gene Editing Institute at Christiana Care Health System focused on delivering cutting-edge CRISPR gene editing curricula to community college students. In addition to training 65 students at DTCC from 2017-2019, four train-the-trainer workshops have engaged 31 community college faculty from 22 institutions representing 12 states. When surveyed, workshop participants reported making notable gains in their understanding of scientific content and how to incorporate gene editing content into their courses.

### **Booth # 809**

#### **Peralta Community College District Office** *Building Efficiency for a Sustainable Tomorrow (BEST) Center*

BEST is advancing the cause of building operations and technicians through multiple initiatives. This showcase will highlight the development of problem- and project-based learning for building automation, heating and air conditioning, and energy management; a new High Performance Building Operations Professional (HPBOP) certification; and career awareness/marketing resources.

### **Booth # 810**

#### **Trident Technical College** *Flight Deck Virtual Maintenance Trainer Project*

A Flight Deck Virtual Maintenance Trainer will be used to create new curriculum and modify existing related curriculum to significantly enhance student education in industry's high-demand aeronautical fields, as well as encourage K-12 students to pursue aeronautical and other STEM careers. This showcase will focus on the technological infrastructure and curricula of the college's avionics program.

# SHOWCASE SESSION II – ABSTRACTS

## Booth # 900

**Williston State College (WSC)**  
*Diversifying Technician Education in North Dakota*

Williston State College will showcase the collaborative effort of the Information Technology and Industrial Automation programs funded by NSF to diversify technician education in North Dakota. The energy industry is requiring more graduates with automation and networking/IT skills. WSC's IT and automation departments are blending their curricula to offer students a broad range of options to develop relevant skills for successful future employment in oil and gas, process plant, agriculture, waste water management, and other industries in the state.

## Booth # 901

**Utah Valley University (UVU)**  
*Integrating Environmentally Improved Photolithography Technology and Virtual Reality into Advanced Nanotechnology Education*

Utah Valley University is developing course material, including lecture discussions, laboratories, and virtual reality simulations of laboratory equipment, for associate's level programs at UVU and beyond. The showcase session will highlight some of the hands-on virtual reality modules that have already been developed, and will discuss outreach and development efforts to date in our three-year grant program.

## Booth # 902

**Florida State College at Jacksonville**  
*Industry 4.0 Technicians in Advanced Manufacturing*

The goal of this project is develop up-to-date and innovative Industry 4.0 course content for existing automation, robotics, mechatronics and engineering technology associate degrees by providing undergraduate students with an opportunity to earn national industry credentials. In addition we will use mechatronics trainers and IoT mini-labs to provide underrepresented populations challenging applied science, engineering, and technology workshops as well as deliver professional development for K-12 STEM faculty to raise awareness of the next industrial revolution.

## Booth # 903

**Rutgers University**  
*Pathways into Careers in Information Technology: Community College Student Decision-Making about Academic Programs and Jobs*

This targeted research in technician education project is examining student decision making around programs and careers in information technology. Researchers from the Rutgers Education and Employment Research Center and faculty from Ivy Tech Community College are working together to conduct this project, and will share early findings from the research.

## Booth # 904

**Mt. Hood Community College**  
*Cooperative Local Internships as a Novel Innovation in Cybersecurity*

Through the Cyber Oregon initiative, small businesses can receive cybersecurity advising and training to minimize these threats. As part of our partnership with the Oregon Center for Cybersecurity at Mt. Hood Community College, small businesses have the opportunity to work with a cybersecurity student to help address their security needs. In addition, our team works with many security providers that help advise, guide, and recommend next steps to address security needs.

## Booth # 905

**Piedmont Virginia Community College**  
*Central Virginia Advanced Manufacturing Initiative*

The Central Virginia Advanced Manufacturing Initiative has created impressive project-based learning modules and an award-winning partnership with regional employers. The dynamic involvement of 17 employers who serve as advisors is exemplified by one manufacturer's implementation of a wireless production device developed by students. The 10 project-based learning modules created by the faculty team are being shared with teachers at nine high schools to help engage a new generation of technicians for the regional workforce. The initiative's collaboration with Emerson received the Career and Technical Education (CTE) Creating Excellence Award from the Virginia Department of Education.



### **Booth # 906**

#### **Seattle Community College District Office**

##### *Building a 1+3-Year High School to College Pathway to Prepare Students for High-Demand Jobs in Information Technology*

The IT+3 project will enable students from underrepresented backgrounds to enter an Information Technology pathway in high school, allowing them to complete a BAS degree in as little as three years. The pathway will have built in supports such as mentorship and tutoring, as well as career connected learning and networking opportunities. This project is a partnership between the local public school district, the community college system, and community partners such as Computing for All.

### **Booth # 907**

#### **Saint Paul College**

##### *Enhancing Minnesota's Science Technician Workforce*

This showcase will feature our Science Technician program which aims to diversify the workforce as well as fulfill the needs of Minnesota's chemical and biological industries.

### **Booth # 908**

#### **Seattle Community College District Office**

##### *Aligning Students into Accelerated Pathways in Engineering, Technology, and Building Science*

South Seattle College is addressing common barriers to STEM recruitment and completion by: (1) implementing a STEM AAS degree that aligns existing skills in engineering technology with degree requirements to accelerate completion; (2) offering STEM field experiences that expose undergraduates to industry work; and (3) creating a network of community, industry, and educational partners to advance accelerated STEM programs.

### **Booth # 909**

#### **Black River Technical College**

##### *Precision Ag Technicians: Improving Arkansas Farming*

This project aims to educate prospective farm workers for precision agriculture. A technical certificate has been created with 25 semester hours stackable for a higher degree. The project will also offer the certificate concurrently for high school students.

### **Booth # 910**

#### **Front Range Community College (FRCC)**

##### *Biotech Jumpstart: Building Competency and Career Awareness through Scientific Inquiry*

The goal of this small ATE project is to develop the biotechnology educational pipeline in Colorado by increasing students' exposure and engagement in biotechnology careers. To achieve this goal, inquiry-based biology labs have been developed and implemented in local high schools and in high-enrolled science courses at FRCC. Partnerships with local industry ensure the workforce relevancy of the lab curriculum, and provide engaging career exploration opportunities to attract students into biotechnology careers. FRCC students serve as near-peer mentors to facilitate student learning in the classroom and promote self-efficacy in career exploration.

# 2019 ATE STUDENT/ALUMNI PARTICIPATION



## AACC AND NSF WISH TO CONGRATULATE THE FOLLOWING ATE STUDENTS AND RECENT ALUMNI SELECTED TO ATTEND THE 2019 ATE CONFERENCE.

Rafaela Alba, New York City College of Technology, NY  
Sameer Ally, Naugatuck Valley Community College, CT  
Alvin Ayensu, Bucks County Community College, PA  
Jonathan Blas, Hartnell College, CA  
Ian Brittain, Motlow State Community College, TN  
Christian Burke, Pasadena City College, CA  
Recho N. Byaruhanga, Bronx Community College, NY  
Mutayab Choudhary, New York City College of Technology, NY  
David Colmaneres, Reedley College/Madera Center, CA  
Sarah Conrad, Highline College, WA  
Angela L. Consani, Kansas City Kansas Community College, KS  
Alexander Coronis, University of Tennessee at Chattanooga, TN  
Erika Cuellar, Housatonic Community College, CT  
Lydia DeLoach, Highline College, WA  
Jacob Downing, Columbus State Community College, OH  
Cade Erbes, North Dakota State College of Science, ND  
Meghan E. Gagnon, Asnuntuck Community College, MA  
Elijah Gibson, Kansas City Kansas Community College, KS  
Gilbert Gonzalez Marin, Cypress College, CA  
Amanda Gregg, Northwestern Connecticut Community College, CT  
Martha Haro, Hartnell College, CA  
Isaac L. Hernandez, Palomar College, CA  
Jonathan Anthony Hernandez, Columbus State Community College, MD  
Phillip Hernandez, Reedley College/Madera Center, CA  
Cary Hill, North Arkansas College, AR  
Amberly Hoffman, Sinclair Community College, OH  
Warren Hunter, New York City College of Technology, NY  
Aneeza Hussain, New York City College of Technology, NY  
Trajada Jackson, Naugatuck Valley Community College, CT  
Omaru Jawara, Borough of Manhattan Community College, NY  
Dusty Kesterson, Cossatot Community College of the University of Arkansas, AR  
Piotr Kluba, Manchester Community College, CT  
Marcello Lucci, Bucks County Community College, PA  
Markie MacFee, Carroll Community College, MD  
Bibiano Martinez, Reedley College/Madera Center, CA  
Jasmine Mueller, Shoreline Community College, WA  
Zahira Munawar, CUNY York College, NY  
Bryanna Najera, Kansas City Kansas Community College, KS  
Brandon Nguyen, Cypress College, CA  
Jessica Pereira, Reedley College/Madera Center, CA  
Diana Mariel Perez, Palomar College, CA  
Ushana Persaud, CUNY York College, NY  
Chloe Pieoper-Wasem, Reedley College/Madera Center, CA  
Mike Pinkerman, Columbus State Community College, OH  
Cynthia Pitcher, Northwestern Connecticut Community College, CT  
Charlotte Purdy, Phillips Community College of the University of Arkansas, AR  
Estelle Ramage, Asnuntuck Community College, MA  
Dezaray Reyes, Reedley College/Madera Center, CA  
Nicholas Ries, Housatonic Community College, CT  
Evin Robertson, Indian River State College, FL  
Daniel Rodriguez, Utah Valley University, UT  
Johna Sanders, Reedley College/Madera Center, CA  
Andreas Sauter, Tennessee Technological University, TN  
Ricketta Self, Alamance Community College, NC  
Shawn Shields Lyons, Germanna Community College, VA  
Thomas Sheldon, Naugatuck Valley Community College, CT  
Juan Manuel Silva, Texas Southmost College, TX  
Keith Smith, Rowan Cabarrus Community College, NC  
Quinlan S. Smith, Palomar College, CA  
Shane Terry, Tennessee Technological University, TN  
Robert Thomas, Northeast Community College, NE  
Kinley Wright, Cossatot Community College of the University of Arkansas, AR

# ATE STUDENT/ALUMNI POSTER SESSION

Thursday, October 24

12:30 – 2:00 pm

Ambassador

Poster #	Student Name and Institution
28	Rafaela Alba, New York City College of Technology, NY
26	Sameer Ally, Naugatuck Valley Community College, CT
5	Alvin Ayensu, Bucks County Community College, PA
16	Jonathan Blas, Hartnell College, CA
25	Ian Brittain, Motlow State Community College, TN
37	Christian Burke, Pasadena City College, CA
4	Recho N. Byaruhanga, Bronx Community College, NY
30	Mutayab Choudhary, New York City College of Technology, NY
38	David Colmaneres, Reedley College/Madera Center, CA
17	Sarah Conrad, Highline College, WA
22	Angela L. Consani, Kansas City Kansas Community College, KS
48	Alexander Coronis, University of Tennessee at Chattanooga, TN
19	Erika Cuellar, Housatonic Community College, CT
18	Lydia DeLoach, Highline College, WA
7	Jacob Downing, Columbus State Community College, OH
32	Cade Erbes, North Dakota State College of Science, ND
2	Meghan E. Gagnon, Asnuntuck Community College, MA
23	Elijah Gibson, Kansas City Kansas Community College, KS
14	Gilbert Gonzalez Marin, Cypress College, CA
34	Amanda Gregg, Northwestern Connecticut Community College, CT
16	Martha Haro, Hartnell College, CA
35	Isaac L. Hernandez, Palomar College, CA
8	Jonathan Anthony Hernandez, Columbus State Community College, OH
39	Phillip Hernandez, Reedley College/Madera Center, CA
31	Cary Hill, North Arkansas College, AR
44	Amberly Hoffman, Sinclair Community College, OH
29	Warren Hunter, New York City College of Technology, NY
30	Aneeza Hussain, New York City College of Technology, NY
26	Trajada Jackson, Naugatuck Valley Community College, CT
3	Omaru Jawara, Borough of Manhattan Community College, NY
10	Dusty Kesterson, Cossatot Community College of the University of Arkansas, AR

Poster #	Student Name and Institution
24	Piotr Kluba, Manchester Community College, CT
5	Marcello Lucci, Bucks County Community College, PA
6	Markie MacFee, Carroll Community College, MD
38	Bibiano Martinez, Reedley College/Madera Center, CA
43	Jasmine Mueller, Shoreline Community College, WA
12	Zahira Munawar, CUNY York College, NY
23	Bryanna Najera, Kansas City Kansas Community College, KS
14	Brandon Nguyen, Cypress College, CA
41	Jessica Pereira, Reedley College/Madera Center, CA
35	Diana Mariel Perez, Palomar College, CA
13	Ushana Persaud, CUNY York College, NY
40	Chloe Pieoper-Wasem, Reedley College/Madera Center, CA
9	Mike Pinkerman, Columbus State Community College, OH
34	Cynthia Pitcher, Northwestern Connecticut Community College, CT
47	Charlotte Purdy, Phillips Community College of the University of Arkansas, AR
2	Estelle Ramage, Asnuntuck Community College, MA
41	Dezaray Reyes, Reedley College/Madera Center, CA
20	Nicholas Ries, Housatonic Community College, CT
21	Evin Robertson, Indian River State College, FL
49	Daniel Rodriguez, Utah Valley University, UT
40	Johna Sanders, Reedley College/Madera Center, CA
45	Andreas Sauter, Tennessee Technological University, TN
1	Ricketta Self, Alamance Community College, NC
27	Thomas Sheldon, Naugatuck Valley Community College, CT
15	Shawn Shields Lyons, Germanna Community College, VA
46	Juan Manuel Silva, Texas Southmost College, TX
42	Keith Smith, Rowan Cabarrus Community College, NC
36	Quinlan S. Smith, Palomar College, CA
45	Shane Terry, Tennessee Technological University, TN
33	Robert Thomas, Northeast Community College, NE
11	Kinley Wright, Cossatot Community College of the University of Arkansas, AR

# ATE STUDENT/ALUMNI POSTER ABSTRACTS

**Thursday, October 24**

**12:30 – 2:00 pm**

**Ambassador**

## **Poster # 1**

**Alamance Community College**  
*Ricketta Self*

This poster will share how the Mechatronics Technology Institute partners with the local advanced manufacturing industry and the Alamance County school system to prepare STEM teachers and counselors to become a part of the mechatronics education-to-workforce pipeline.

## **Poster # 2**

**Asnuntuck Community College**  
*Meghan E. Gagnon,*  
*Estelle Ramage*

This poster explores how, through the machining projects required for our program, students have acquired the necessary skills to enter the aerospace manufacturing industry that is prevalent in New England. The range of knowledge acquired spans from concept and design to final piece production. This includes bench work, manual and CNC machining, inspection, and programming.

## **Poster # 3**

**Borough of Manhattan Community College**  
*Omaru Jawara*

This poster discusses how security threats are a main issue in the world of technology. Cybersecurity does not involve only companies and or governments. Personal computers and electronic devices contain information that hackers want, such as stored credit and debit credentials, and social media account information. These data breaches lead to access to contacts and messages sent with links that contain malware to our contacts.

## **Poster # 4**

**Bronx Community College**  
*Recho N. Byaruhanga*

This poster will highlight saving our environment and the world through science. What is considered waste and discarded can be converted into a valuable resource through certain scientific processes. One such process involves the conversion of switch grass pulping to extract cellulose that will eventually be used to produce biofuel—thus saving the Earth from unnecessary pollution.

## **Poster # 5**

**Bucks County Community College**  
*Alvin Ayensu, Marcello Lucci*

This poster will present multiple ongoing projects at Bucks County Community College. We are investigating alternative energy sources using a generator in a wind tunnel. We will discuss how we use 3D printing to develop individual projects as well as manufacture parts necessary for other projects, such as generators. Some of our 3D projects include large scale prints and kinetic sculptures.

## **Poster # 6**

**Carroll Community College**  
*Markie MacFee*

This poster explores the demand for competent audiovisual technicians as the advancing multimedia use across education, business, and entertainment escalates. This poster examines how specialized courses, practicums, and co-ops offered by the Carroll Community College's Entertainment Technology program prepares students to operate industry-specific technology in various venues, allowing them to support new presentation methods as they become relevant in modern business operations.

## **Poster # 7**

**Columbus State Community College**  
*Jacob Downing*

This poster, Alternative Energy: Fueling the Future of Transportation, will cover both current and emerging technologies in alternatively fueled vehicular propulsion systems being used and developed across the globe. The poster will address three types of hybrid electric vehicles, alternative petroleum-based fuels, and hydrogen fuel cell systems.

## **Poster # 8**

**Columbus State Community College**  
*Jonathan Anthony Hernandez*

This poster looks at phishing and how it is a scam by which end users are deceived to reveal personal and confidential information such as passwords and social security numbers. These attacks are being used to infiltrate companies and steal information. Forty-three percent of data breaches start with sending a phishing email. We should be aware and educate ourselves about this matter because information security starts with us.

## **Poster # 9**

**Columbus State Community College**  
*Mike Pinkerman*

This poster session highlights the needs for cybersecurity training. The Bureau of Labor Statistics cites a national employment growth of 37 percent through 2022 in cybersecurity. The U.S. earmarked \$15 billion in spending on cybersecurity in 2019; and the U.S. remains a target of 38 percent of all cyber-attacks. The need for training is monumental, and the success of this endeavor affects virtually all areas of society across the globe.

### Poster # 10

#### **Cossatot Community College of the University of Arkansas (UA Cossatot)**

*Dusty Kesterson*

This poster explores the project, "Naturally Fun in Sevier County: A GIS Inventory of Recreational Activities in Sevier County, Arkansas." During this project, students in the fall 2019 Natural Resources course at UA Cossatot used Survey123 for ArcGIS to collect data about recreational activities involving natural resources in Sevier County, Arkansas.

### Poster # 11

#### **Cossatot Community College of the University of Arkansas**

*Kinley Wright*

This poster highlights, "Just Show It," which is a GIS application to record livestock exhibitors' accomplishments. This project allows livestock exhibitors to submit data about the livestock shows attended, animals exhibited, and their placings and awards.

### Poster # 12

#### **CUNY York College**

*Zahira Munawar*

Variables such as income, educational attainment, and unemployment rates may be used to determine "quality of life." This poster session examines the "Quality of Life," a scale comprised of the expectations of an individual, group, or society for an ideal life, of residents in a selected county of the United States. Although further research using several factors is needed for a more complete understanding, this study will assess a possible outcome using software such as ArcGIS. Factfinder from U.S. Census and Open Data portals were used to collect data and illustrate the variables into maps.

### Poster # 13

#### **CUNY York College**

*Ushana Persaud*

This poster explores our preliminary study to assess community wellness by testing the local drinking water sources of the village Carbuna located in the Republic of Moldova. A story map based on the field water testing data and land use practices was developed by compiling the field data on physical, chemical, and biological characteristics of surface and groundwater of the village.

### Poster # 14

#### **Cypress College**

*Gilbert Gonzalez Marin,  
Brandon Nguyen*

This poster outlines student participation in the Pathway to Advancement of Cybersecurity Education (PACE) project. PACE offers a cybersecurity pathway from middle school to four-year institutions with a number of exit points; provides high quality professional development programs to encourage activities to improve student success; and leverages existing technology and business/industry relationships to strengthen student recruitment efforts.

### Poster # 15

#### **Germanna Community College**

*Shawn Shields Lyons*

This poster shows how, as a community college faculty participant in three prior NSF ATE-supported grants, my career path has integrated what I have learned teaching courses and developing online coursework in geographic information systems (GIS), remote sensing, and unmanned aircraft systems (UAS). I also developed a small student-centered research group focused on the analysis of remote sensing experimental data collected via satellite and UAS.

### Poster # 16

#### **Hartnell College**

*Jonathan Blas, Martha Haro*

For this poster presentation, two Hartnell College students will demonstrate how the college has developed a seamless pathway from high school to community college to local universities for students interested in Agriculture with an emphasis in Food Safety and Seed Technology. Students will also share the many resources and opportunities the college has to offer in visiting Hartnell College and in making a smooth transition into a four-year university.

### Poster # 17

#### **Highline College**

*Sarah Conrad*

This poster tackles the concept of what we can do to garner more student interest in the field of cybersecurity—with a focus on reaching female students at the K–12 level. As of 2019, 24 percent of the cybersecurity workforce consists of women. Research has shown that outreach at the K–12 level has encouraged more young women to be aware of, take interest in, and pursue a career in the field of cybersecurity.

### Poster # 18

#### **Highline College**

*Lydia DeLoach*

This poster highlights Highline College's Digital Forensics and Investigations AAS program. The program is a 91-credit degree that can be obtained in as little as a year and a half. Students learn about computer security, hardware, multiple types of operating systems, networking and scripting, intrusion detection, system administration, search and seizure, ethics, laws, how to take advantage of numerous forensic programs, and much more.

# ATE STUDENT/ALUMNI POSTER ABSTRACTS

## Poster # 19

**Housatonic Community College**  
*Erika Cuellar*

This poster will examine the T-slot Cleaner. The T-slot Cleaner keeps t-slots free of debris, such as coolant and metal chips. This technology reduces set-up time and improves the efficiency of table cleaning. It is a safer alternative to blowing chips out with air.

## Poster # 20

**Housatonic Community College**  
*Nicholas Ries*

My poster showcases my path to industry success through Housatonic's program in advanced manufacturing. The poster will focus on everything from the values my teachers taught me to the projects I was engaged in through this program. While looking back at my experience in manufacturing, I will talk on how important our school curriculum was to starting students, such as myself, on the path to success.

## Poster # 21

**Indian River State College**  
*Evin Robertson*

In this poster presentation, I will outline my path to connect my interests in biomedical engineering with my love of photonics. This endeavor requires personal dedication and guidance from the institutions within my community.

## Poster # 22

**Kansas City Kansas Community College**  
*Angela L. Consani*

After participating in the Bioscience Industry Fellowship Program this past summer, this poster will share what was learned from the companies and education programs that were visited during the three week program. The poster will show photo documentation of many of the activities and skills the participants enjoyed and a short explanation of ways the skills have informed their teaching.

## Poster # 23

**Kansas City Kansas Community College**  
*Bryanna Najera, Elijah Gibson*

This poster will discuss our experience with the Kansas City, Kansas bio-manufacturing training laboratory. We will also share our experiences in participating in summer internships at the Kansas University Medical Center. We will discuss what we've we learned throughout the year, why we chose to be a part of these experiences, and what we gained from them.

## Poster # 24

**Manchester Community College (MCC)**  
*Piotr Kluba*

This poster examines MCC's manufacturing engineering bachelor program and its CAD/CAM software. In the program, I learned to create 3D models and, from that, create CNC programs that can be used in fabricating aerospace components. My education influenced me to find a career where I can dive deeper into modeling and manufacturing engineering in a growing aerospace company.

## Poster # 25

**Motlow State Community College**  
*Ian Brittain*

This poster will explore the innovation and impact of using smart technology in the classroom. It will illustrate ways to enhance the learning and understanding of programming robots in automated processes.

## Poster # 26

**Naugatuck Valley Community College**  
*Sameer Ally, Trajada Jackson*

This poster details the development of a Rube Goldberg machine and each individual step taken to create it. It also provides needed calculations regarding the transfer of energy through the motion of some of its specific parts, and shares the process of its creation with attention to the intuition and creativity of its developers.

## Poster # 27

**Naugatuck Valley Community College**  
*Thomas Sheldon*

This poster addresses the challenges in the design, construction, and destructive testing of an artificial hip joint. In this project, hip and fixtures were printed in ABS and tested for compressive strength and angle of twist (using a correction factor for a titanium alloy) in an Instron tensile tester and Tinius Olsen torsion tester.

## Poster # 28

**New York City College of Technology**  
*Rafaela Alba*

This poster explores a prosthetic leg designed for trans-tibial amputees who are very active. The design incorporates a harness that adds more security, as well as a bladed foot. The suspension method is a unique pin-head system.

**Poster # 29**  
**New York City College  
of Technology**  
*Warren Hunter*

This poster introduces MARS, a small wheeled robot, that will assist users both inside and out of the home. MARS has the ability to climb stairs to go where the user goes, and a simple AI system that provides appointment and medication reminders. Additionally the poster will show how an IoT and 3D-printed prosthetic provides real-time and continuous user health data to healthcare providers.

**Poster # 30**  
**New York City College  
of Technology**  
*Mutayeb Choudhary,  
Aneza Hussain*

This poster illustrates the development of a product idea by first identifying an issue with contemporary dental care—and proposes to address this issue by focusing on the improvement of the patient experience. Improved patient experience is measured by shortening the length of healing time, decreasing the number of doctor visits, and reducing the possibility of dental implant failure.

**Poster # 31**  
**North Arkansas College**  
*Cary Hill*

This poster addresses cybersecurity. Cybersecurity is the main focus of my studies, and a big issue for modern businesses and countries of the world. I am currently studying for an associate's degree in Network and Systems Administration. I am planning on continuing to study and learn as much as possible about the world of technology.

**Poster # 32**  
**North Dakota State College  
of Science**  
*Cade Erbes*

This poster will review the development and results of a high school welding/manufacturing program offered on the North Dakota State's College of Science campus. This poster shows how college-credit eligible programming can influence students' perceptions, interests, and participation in the manufacturing field.

**Poster # 33**  
**Northeast Community College**  
*Robert Thomas*

At Northeast Community College, I studied the effect of planter downforce and the effect it had on corn emergence and yield. We used precision planting technology with hydraulic downforce capabilities, weigh pin sensors, a 20/20 monitor, and a Climate Fieldview Cab to collect and analyze data. The future of planter technology is using sound agronomic data to help farmers manage their seed inputs with more precision than ever before. I will share the results of the study from year one and also discuss the study's progression from year two.

**Poster # 34**  
**Northwestern Connecticut  
Community College**  
*Amanda Gregg, Cynthia Pitcher*

Our project develops a pathway to technical careers from middle and high school to the community college. Projects include tutoring high school students, mentoring middle school students, learning laboratory technician skills, and job shadowing. Participation instilled confidence within students to pursue future opportunities and excel in their education.

**Poster # 35**  
**Palomar College**  
*Isaac L. Hernandez,  
Diana Mariel Perez*

Our poster provides a visual representation of construction projects that were conducted at Palomar College and shows the changes before and after construction. We intend to demonstrate how UAS can provide a different spatial perspective, which can help to see things that would not have been possible before. Over the last decade, a growing number of UAS platforms and remote sensing technologies that were once only available to the military and government have now sufficiently been integrated into the civilian market, to the point where miniaturization of these technologies are successfully competing with traditional mapping and survey operations.

**Poster # 36**  
**Palomar College**  
*Quinlan S. Smith*

Using tidal information provided by the U.S. Army Corps of Engineers (USACE) and precise LiDAR elevation measurements from the U.S. Geological Survey (USGS), this analysis produces a plausible visualization of the extent of inundation that could occur in the San Elijo lagoon (San Diego County, California) over decades as a result of sea level rise.

**Poster # 37**  
**Pasadena City College**  
*Christian Burke*

Active learning has been shown to be disproportionately beneficial for underrepresented minority (URM) students. This poster explores the success and progression of URM and non-URM students in the general chemistry pathway at Pasadena City College with a focus on active learning vs. lecture-based classrooms.

# ATE STUDENT/ALUMNI POSTER ABSTRACTS

## Poster # 38

**Reedley College/Madera Center**  
*David Colmaneres,*  
*Bibiano Martinez*

By participating in an interactive Summer Ag Camp, high school juniors have the opportunity to explore college and career pathways in agriculture. Summer Ag Camp is the partnership of local agricultural companies, educators, and the agriculture colleges coming together to create an experience that will excite the next generation about careers in agriculture. The focus of the camp is Ag business, Ag science, Ag mechanics, and other related Ag pathways in California. The 2019 Summer Ag Camp focused on Northern California agriculture and collaborated with California State University, Chico.

## Poster # 39

**Reedley College/Madera Center**  
*Phillip Hernandez*

By participating in an interactive Summer Ag Camp, students from the Golden Valley Unified middle school have the opportunity to explore college and career pathways in agriculture. Summer Ag Camp is the partnership of local companies and educators coming together to create an experience that will excite the next generation about careers in agriculture through agriculture education opportunities offered by Liberty High School. The focus of the camp is Ag business, Ag science, Ag mechanics, and other related Ag pathways in Madera County.

## Poster # 40

**Reedley College/Madera Center**  
*Chloe Pieoper-Wasem,*  
*Johna Sanders*

By participating in an interactive Summer Ag Camp, students from the Madera Unified middle schools have the opportunity to explore college and career pathways in agriculture. Summer Ag Camp is the partnership of local companies and educators coming together to create an experience that will excite the next generation about careers in agriculture through agriculture education opportunities offered by Madera South High School. The focus of the camp is Ag business, Ag science, Ag mechanics, and other related Ag pathways in Madera County.

## Poster # 41

**Reedley College/Madera Center**  
*Jessica Pereira,*  
*Dezaray Reyes*

This poster focuses on the, "2+2+2 Building and Agriculture Industry Pipeline," which is a dual enrollment pathway partnership between the Madera Unified School District, Madera Community College Center, and Fresno State. This ATE project will develop and strengthen postsecondary education and career pathways in agriculture business and technology for underrepresented minority student populations. The Madera Community College Center and Madera South High School collaborated to create CTE career pathways in the areas of agriculture business and plant science.

## Poster # 42

**Rowan Cabarrus Community College**  
*Keith Smith*

This poster will share information on a professional development experience in the Resiliency program at Rowan Cabarrus Community College. In this project, instructors are paired with research and industry partners to learn hands-on research techniques that can be incorporated back into high school curriculum.

## Poster # 43

**Shoreline Community College**  
*Jasmine Mueller*

This poster discusses how the binding affinity of Feline IgG to Protein L was previously unexamined. This study compares the affinity of Feline IgG for Protein L and Protein A/G using NanoDrop Spectrophotometry, SDS-PAGE, and ELISA. Results show Feline IgG has a high affinity for Protein A/G and low affinity for Protein L in chromatography columns.

## Poster # 44

**Sinclair Community College**  
*Amberly Hoffman*

This poster highlights how to support students in an age of quick answers. At a time when students can readily "just Google it," how do we continue to engage students in critical thinking and learning? Through immediate application of new skills, supplemental instruction guides students through the process of knowledge construction vs. knowledge lookup.



### Poster # 45

**Tennessee Technological University**  
*Andreas Sauter,  
Shane Terry*

This poster explores TechBot, a mobile multifunctional fabrication platform that is capable of printing with multiple paste-type materials. The 3D printer was built for under \$500. Data was collected on the effect printing and material variables have on the quality of print. Statistical analysis was performed with the collected data. The development of a mobile multi-tasking fabrication platform allows for the deposition of unique materials into boundless shapes. With the limitations of an enclosure removed, the machine is able to produce objects out of food, clay, and concrete into complex structures.

### Poster # 46

**Texas Southmost College**  
*Juan Manuel Silva*

Through the BUENO Project, I received hands-on experience in several biotechnology techniques as part of biology coursework. This poster session presentation summarizes how I applied what I learned as a mentor in biotechnology sessions during the Texas Southmost College's Scorpion Summer Camp for middle and high school students.

### Poster # 47

**Phillips Community College of the University of Arkansas**  
*Charlotte Purdy*

The purpose of my poster is to educate others on the vulnerability they risk when leaving their WiFi connections open instead of securing them. Through a study we performed in our college class, we found that approximately 80 percent of WiFi connections are open, allowing us to connect to them without having to key-in passwords.

### Poster # 48

**University of Tennessee at Chattanooga**  
*Alexander Coronis*

In this poster, I investigate the recent advances in energy efficiency improvement that results from incorporating next-generation robotics in industrial plants. Energy efficiency is improved through the collaborative work of intelligent robotics and human operators. Compact size, advanced sensory and perception, algorithms, and computing capability allow for high efficiency improvements.

### Poster # 49

**Utah Valley University**  
*Daniel Rodriguez*

This poster will explore nanotechnology—a rapidly growing field with medical, electronic, and manufacturing applications. More and more industries are taking advantage of microfluidic, microelectronic, and nanofabrication techniques. Understanding the basic principles that dominate at the nanometer scale will be an important job skill for future technology professionals.

# CONFERENCE STEERING COMMITTEE



**Many thanks to the following individuals for their dedicated assistance in planning the 2019 ATE Conference.**

Cathy Balas, Clark State Community College, OH

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Ruth Wrightsman, Flathead Valley Community College, MT

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EvaluATE is the evaluation support center for the National Science Foundation's Advanced Technological Education (ATE) program. We are supported by NSF under grant numbers 1600992 and 1841786.

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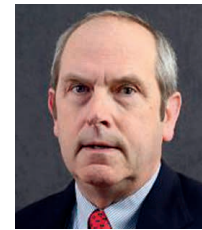
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