Save the Date!
July 17–20, 2017

High Impact Technology Exchange Conference
July 25–28
PITTSBURGH

HI-TEC Salt Lake City

All sessions held at the Wyndham Grand Pittsburgh

highimpact-tec.org
It is with great pleasure that we welcome you to the 2016 High Impact Technology Exchange Conference, HI-TEC, in Pittsburgh, PA. HI-TEC is unique because it directly addresses the needs of technician educators. Attendees will have a plethora of opportunities to network—breaks, meals, and the exhibit hall. You will also discover exciting advances in technology and teaching that will help prepare the New American Workforce.

We encourage you to review your HI-TEC program carefully as there are many outstanding choices for your consideration. You have the opportunity to explore concurrent sessions and attend one or more of the Monday and Tuesday preconference workshops. You may also want to join one of the four technology site visits unique to Pittsburgh. This year’s site visits include: Human Engineering Research Lab, The Robotics Institute at Carnegie Mellon, historic sites managed by Rivers of Steel National Heritage, and the architectural wonder of Frank Lloyd Wright’s Fallingwater.

Pittsburgh is eminently American. We hope you have the chance to experience the physical beauty of the city, along with its wealth of art and culture. Thank you for attending this year’s HI-TEC and contributing to its growth and improvement. Please mark your calendar for HI-TEC 2017 in Salt Lake City, UT, at the beautiful Grand America Hotel, July 17–20.

Kris Frady, 2016 Chair, CA2VES

Committees and Key Personnel

EXECUTIVE COMMITTEE
Chair: Kris Frady, CA2VES
Mentors: Marilyn Barger, FLATE; Mike Lesiecki, MATEC Networks
Ann Beheler, CTC; Deborah Boisvert, BATEC; Jamey Capers, RCNET; Kevin Cooper, RCNET; Bob Ehrmann, NACK; Beverly Hilderbrand, CARCAM; Donna Lange, DeafTEC; Deb Newberry, NanoLink; John Sands, CSSIA; Gordon Snyder, OP-TEC; Karen White, 360°; Sheila Wilson, CORD

AWARDS
Chair: Beverly Hilderbrand, CARCAM
Elaine Johnson, Bio-Link; Karen Woszyna-Birch, RCNGM; Barbara Murray, SMART

MARKETING
Chair: Jamey Capers, RCNET
Jessica Gehrke, 360°; Wendy Robicheau, RCNGM; Christine Dossey, OP-TEC; Josie Vargas, OP-TEC; Brian Rucci, SHINE

TECHNOLOGY
Chair: Gordon Snyder, OP-TEC

PROGRAM Workshops/Tours
Chair Tours: Bob Ehrmann, NACK
Chair Workshops: Ann Beheler, CTC; Karen Birch, RCNGM; Deborah Boisvert, BATEC

KEYNOTES
Chair: Deborah Boisvert, BATEC

PROCEEDINGS
Co-Chairs: Donna Lange, DeafTEC; Rachael Bower, ATE Central
Editor: Myra Pelz, DeafTEC
Marilyn Barger, FLATE; Ann Beheler, CTE; Gordon Snyder, OP-TEC; Michael Lesiecki, MATEC Networks

PROGRAM Sessions
Co-Chairs: Karen White, 360°; Ann Beheler, CTC

Welcome to Pittsburgh!

Special Thanks to the host college, Community College of Allegheny County, for its support of HI-TEC.
July 2016 will mark the 8th anniversary for the HI-TEC Conference. Spearheading this conference, I have had the privilege of working with a diverse group of colleagues whose enthusiasm and drive make this event happen. This is an all volunteer group and we share the work and effort – with a single goal, to produce an excellent event for technical educators. Annually, working in committees, we pull all of the elements of a great conference together, to create a better event each year.

It is my privilege to acknowledge and thank the committees for their time and effort in making this year’s HI-TEC a success. Ann Beheler, Bob Ehrmann, and Karen White did a tremendous job of coordinating the program efforts and the technology site visits. Beverly Hilderbrand managed the awards committee and the task of determining awards for each sector. Gordon Snyder had the daunting task of coordinating the technology needs of HI-TEC. Donna Lange oversaw the sponsorship committee and organized the new Conference Proceedings Committee producing the e-proceedings publication, which will be disseminated after the conference. Jamey Capers organized the marketing committee. Deborah Boisvert secured the keynote speakers. Marilyn Barger was instrumental in coordinating with our host college – Community College of Allegheny County – and performed many tasks behind the scenes. Mike Lesiecki, Deb Newberry, Kevin Cooper and John Sands all worked to help manage the details.

Special thanks are owed to Sheila Wilson and her team from the Center for Occupational Research and Development (CORD). Once again, they have done an outstanding job in coordinating all of the details that make HI-TEC a success.

As with any large event, financial support is imperative and I want to gratefully acknowledge the financial support of the National Science Foundation, which funds the Advanced Technological Education program and the community of Centers that annually produces HI-TEC.

Kris Frady, 2016 Chair, CA2VES
General Information

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Special Events

OP-TEC Photonics College Network (OPCN)
Meetings
  By invitation only
  Kings Garden 2 (2nd floor), Monday
  Commonwealth 2, Tuesday

Mentor-Connect: Leadership Development and Outreach for ATE
  By invitation only
  Sterlings 1 & 2, Tuesday, 8:00 A.M.–5:00 P.M.

Regional Center for Nuclear Education and Training (RCNET) Meeting
  By invitation only
  Tuesday, 1:00–5:00 P.M., Ft. Pitt

FLATE Mechatronics Reception
  By invitation only
  Commonwealth 1, Tuesday, 5:00–7:00 P.M.
  Sponsors: FESTO, SMC International Training, MSSC

NNMI Meeting
  For NSF ATE Centers and Projects
  Commonwealth 1, Wednesday, 7:00–7:45 A.M.
  See page 23 for description.

DOL and NSF Workforce Convening
  Commonwealth 2, Friday, 8:30 A.M.–12:30 P.M.
  Continental breakfast included

Hotel Information
Wyndham Grand Pittsburgh Downtown
600 Commonwealth Place
Pittsburgh, PA 15222
412-391-4600

Registration Hours
HI-TEC Registration Desk, Grand Ballroom Foyer
Sunday 4:00–7:00 P.M.
Monday 7:00 A.M.–6:00 P.M.
Tuesday 7:00 A.M.–6:00 P.M.
Wednesday 7:00 A.M.–5:00 P.M.
Thursday 7:30 A.M.–1:00 P.M.

EXHIBIT HALL
Grand Ballroom 1 and Kings Garden
Wednesday 9:45 A.M.–6:00 P.M.
Thursday 7:30 A.M.–Noon
Reception 4:30–6:00 P.M.
Posters 3:00–6:00 P.M.

In the Grand Ballroom Foyer . . .
Caricatures by M. C. Sturmen (Wednesday only)
9:45 A.M.–Noon and 1:00–6:00 P.M.
Join the fun and have your caricature drawn by a local artist!

Live Twitter Stream #highimpact2016
Wednesday and Thursday
The more you tweet, the more you increase your chance of winning a $50 Amazon gift card at the Thursday Keynote Luncheon! Follow us on Twitter @Hi_Tec. A monitor showing the Twitter stream will be on display in the Grand Ballroom Foyer.
As educators, we should aspire to a growth mindset—a belief that learners can grow and accomplish more. Becky Wai-Ling Packard, a researcher and author of *Successful STEM Mentoring Initiatives for Underrepresented Students: A Research-Based Guide for Faculty and Administrators*, explores the role of mentoring to achieve that mindset and how to create a culture of mentoring at our colleges, schools, and organizations. While formalized mentoring programs can be powerful, we cannot underestimate the power of smaller, informal mentoring interactions such as those that take place in hallways, before or after class, or in workplace or internship environments. Indeed, we can move toward a culture of mentoring if we are more intentional. You will leave with practical actions that you can take to improve the culture of mentoring throughout your spaces.

**Jerry Volcy and the SpelBots**

*Wednesday, July 27, 8:30–9:45, Grand Ballroom 2–4*

The SpelBots, the Robotics Team from Spelman College, is led by Jerry Volcy, Ph.D., faculty member in the computer and information sciences department. The Spelbots have many firsts to their credit: the first all-female, all African-American undergraduate team to qualify and compete in the 2005 International RoboCup four-legged robot soccer competition; first place in the RoboCup Japan 2009 Standard Platform League Nao League humanoid soccer championship; and the first and only historically black college or university selected to showcase their technology in the Education Technology Showcase in Washington, DC, to U.S. senators and the director of the National Science Foundation. Jerry Volcy and the SpelBots will tell their story about how they encourage students and young women of African descent to explore robotics and computer science.

**Becky Wai-Ling Packard**

*Thursday, July 28, 12:30–1:30, Grand Ballroom 2–4*
### Registration Hours

**HI-TEC Registration Desk, Grand Ballroom Foyer**

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Sunday</td>
<td>4:00–7:00 P.M.</td>
</tr>
<tr>
<td>Monday</td>
<td>7:00 A.M.–6:00 P.M.</td>
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<tr>
<td>Tuesday</td>
<td>7:00 A.M.–6:00 P.M.</td>
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<tr>
<td>Wednesday</td>
<td>7:00 A.M.–5:00 P.M.</td>
</tr>
<tr>
<td>Thursday</td>
<td>7:30 A.M.–1:00 P.M.</td>
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</tbody>
</table>

### Exhibit Hall Hours

**The Exhibit Hall is located in two rooms:**

*Grand Ballroom 1 and Kings Garden*

- **Wednesday:** 9:45 A.M.–6:00 P.M. (Reception 4:30–6:00)
- **Thursday:** 7:30 A.M.–Noon

### Schedule at a Glance

#### PRECONFERENCE

**MONDAY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00–8:30</td>
<td>Continental Breakfast <em>(morning attendees)</em></td>
</tr>
<tr>
<td>8:30–Noon</td>
<td>Preconference Workshops <em>(see page 7)</em></td>
</tr>
<tr>
<td>10:00–10:30</td>
<td>Refreshment Break</td>
</tr>
<tr>
<td>Noon–1:00</td>
<td>Lunch <em>(for afternoon attendees)</em></td>
</tr>
<tr>
<td>1:00–4:30</td>
<td>Preconference Workshops <em>(see page 8)</em></td>
</tr>
<tr>
<td>2:30–3:00</td>
<td>Refreshment Break</td>
</tr>
</tbody>
</table>

#### MAIN CONFERENCE

**WEDNESDAY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45–8:30</td>
<td>Continental Breakfast</td>
</tr>
<tr>
<td>8:30–9:45</td>
<td>Opening and Keynote <em>(see page 23)</em></td>
</tr>
<tr>
<td>9:45–10:15</td>
<td>Refreshment Break</td>
</tr>
<tr>
<td>10:15–11:00</td>
<td>Concurrent Sessions <em>(see page 24)</em></td>
</tr>
<tr>
<td>11:15–Noon</td>
<td>Concurrent Sessions <em>(see page 26)</em></td>
</tr>
<tr>
<td>Noon–1:00</td>
<td>Awards Luncheon <em>(see page 28)</em></td>
</tr>
<tr>
<td>1:15–2:00</td>
<td>Concurrent Sessions <em>(see page 30)</em></td>
</tr>
<tr>
<td>2:15–3:00</td>
<td>Concurrent Sessions <em>(see page 32)</em></td>
</tr>
<tr>
<td>3:00–3:45</td>
<td>Refreshment Break</td>
</tr>
<tr>
<td>3:45–4:30</td>
<td>Concurrent Sessions <em>(see page 34)</em></td>
</tr>
<tr>
<td>3:00–6:00</td>
<td>Poster Sessions <em>(see page 36)</em></td>
</tr>
<tr>
<td>4:30–6:00</td>
<td>Exhibit Hall Reception</td>
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</tbody>
</table>

**THURSDAY**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>7:30–8:15</td>
<td>Continental Breakfast/View Exhibits</td>
</tr>
<tr>
<td>8:15–9:00</td>
<td>Concurrent Sessions <em>(see page 45)</em></td>
</tr>
<tr>
<td>9:15–10:00</td>
<td>Concurrent Sessions <em>(see page 47)</em></td>
</tr>
<tr>
<td>10:00–10:30</td>
<td>Refreshment Break</td>
</tr>
<tr>
<td>10:30–11:15</td>
<td>Concurrent Sessions <em>(see page 49)</em></td>
</tr>
<tr>
<td>11:30–12:15</td>
<td>Concurrent Sessions <em>(see page 51)</em></td>
</tr>
<tr>
<td>12:30–1:30</td>
<td>Keynote Luncheon <em>(see page 53)</em></td>
</tr>
<tr>
<td>1:45–2:30</td>
<td>Concurrent Sessions <em>(see page 54)</em></td>
</tr>
<tr>
<td>2:30–2:45</td>
<td>Break <em>(refreshments provided)</em></td>
</tr>
<tr>
<td>2:45–3:30</td>
<td>Concurrent Sessions <em>(see page 56)</em></td>
</tr>
<tr>
<td>3:45–4:30</td>
<td>Concurrent Sessions <em>(see page 57)</em></td>
</tr>
</tbody>
</table>

*(Indirect tour attendees will receive box lunches on their buses.)*
Monday
July 25

PRECONFERENCE (must be registered to attend preconference events)

7:00 A.M.–6:00 P.M.
Registration (Grand Ballroom Foyer)

8:00–8:30
Continental Breakfast (for morning workshop attendees; Kings Garden 4 and 5)

8:30–Noon
PRECONFERENCE WORKSHOPS
Learn to Use Raspberry Pi (Ft. Pitt)
Engaging STEM-shy Students Through Artistic Context and Interactive Notebook (Sterlings 3)
Trends in Wireless and Mobile Computing—Incorporating New Technologies in the Classroom (Birmingham)
Creating Successful Student Recruiting Strategies (Sterlings 1 and 2)

Noon–1:00
Preconference Lunch (Kings Garden 4 and 5; for afternoon workshop attendees)

1:00–4:30
PRECONFERENCE WORKSHOPS
Fundamentals of Light and Lasers (Sterlings 3)
A Hands-On Introduction to Microcontrollers Featuring the Arduino Platform (Commonwealth 1)
Design Systems Fast in Mechatronics, Robotics, and Embedded Projects (Smithfield)
NSF Proposal Writing and Mock Panel Review (Commonwealth 2)
Preconference Workshops • 8:30–Noon

**Ft. Pitt**

**Learn to Use Raspberry Pi**
This workshop will introduce you to the Raspberry Pi, an inexpensive computer that can do amazing things. You will learn how to hook-up, turn on, and use the Raspberry Pi to take pictures and detect real-world signals such as motion, temperature, and pressure.

*Michael Davis*, BATEC, Truman College, Chicago, IL; *Jonathan Ashdown*, Hudson Valley CC, Troy, NY

**Sterlings 3**

**Engaging STEM-shy Students Through Artistic Context and Interactive Notebook***
Participants will slip into the shoes of STEM-shy students and work on interactive notebooks to gather, digest, and apply information, observation, and data in the context of “Physics in the Arts: Light and Color.” Activities will include image formation by mirrors and lenses. Developed for students at community colleges, these approaches can also be adapted for middle- and high-school levels. (*This work is supported by NASA WV EPSCoR.) Attendees should bring their own laptops.

*Martina Bachlechner*, Kari Coffindaffer, Pierpont Community and Technical College, Fairmont, WV

**Birmingham**

**Trends in Wireless and Mobile Computing—Incorporating New Technologies in the Classroom**
A major challenge for network and cyber security managers concerns mobile devices on their organizations’ wireless networks. This session will examine new technologies for managing, monitoring, and controlling mobile devices. New standards such as 802.11ax, 802.11ad, 802.11ah, and multiuser MIMO will be introduced. Topics will include emerging technologies, standards, and products; cloud-based management; authentication systems; secure communications; highly available redundant architecture; and guarding an organization’s air space. *Attendees should bring their own laptops.*

*Bill Wolfe*, John Sands, CSSIA, Palos Hills, IL

**Sterlings 1 and 2**

**Creating Successful Student Recruiting Strategies**
The National Center for Optics and Photonics Education surveyed over 100 first-year college students. Responses revealed that college recruiters significantly impacted career choices. Sixteen OP-TEC colleges have received grants to hire recruiters and increase the number of students in their STEM programs. A select group of these recruiters will share best practices and strategies that include the use of social media, websites, and refreshing communication strategies to attract the attention of potential students. Working in small groups, participants will lay the groundwork for developing personalized recruitment strategies and learn how to build upon their current outreach efforts.

*Josie Vargas*, Dan Hull, Gordon Snyder, OP-TEC, Waco, TX; *Nicky Wingfield*, Laser-TEC, Fort Pierce, FL; *Carolyn Hulla-Meyer*, Cincinnati State Technical and Community College, Cincinnati, OH
Preconference Workshops • 1:00–4:30

Sterlings 3

**Fundamentals of Light and Lasers**

The 21st century will depend on photonics as much as the 20th century depended on electronics. Photonics is the science of light generation, control, and detection. This workshop will include an explanation of the nature and properties of light and lasers. Laser theory and applications will be described. Hands-on laser and optics laboratory activities will be included.

Greg Kepner, Frank Reed, Midwest Photonics Education Center, Ottumwa, IA

Commonwealth 1

**A Hands-On Introduction to Microcontrollers Featuring the Arduino Platform**

For several years the Connecticut College of Technology has conducted NSF-funded student programs. Students select projects submitted by select Connecticut and U.S. Government organizations, and embedded microcontrollers are often required. Many students have had little or no training on these devices. The Arduino platform is also actively used at Tri-County Technical College, in South Carolina. Both groups will combine to demonstrate the ease of using the Arduino platform.

Attendees should bring their own laptops.

Chuck Paulsen, Karen Wosczyna-Birch, Regional Center for Next Generation Manufacturing (RCNGM), Farmington, CT; Eric Flynn, Gateway Community College, New Haven, CT; Dorian McIntire, Mandy Orzechowski, Tri-County Technical College, Pendleton, SC. *Equipment provided by BATEC.*

Smithfield

**Design Systems Fast in Mechatronics, Robotics, and Embedded Projects**

Attendees will learn how to use embedded technology to teach mechatronics, robotics, and embedded concepts. Learn how to create hands-on projects using NI myRIO, an embedded device designed for developing real, complex systems using a dual-core ARMA®-Cortex-A9 real-time processor and customized I/O (onboard accelerometer, programmable LEDs, audio I/O, analog and digital I/O, and USB port) with a Xilinx FPGA. For educators in mechatronics, robotics, and embedded systems.

Mark Walters, National Instruments, Austin, TX

Commonwealth 2

**NSF Proposal Writing and Mock Panel Review**

This workshop will present an overview of NSF programs of interest to two- and four-year institutions. The NSF Merit Review process will be presented, and a panel of principal investigators of current awards will discuss their experiences. Participants will review and rate a successful NSF proposal.

V. Celeste Carter, Tom Higgins, National Science Foundation, Arlington, VA
Advanced Technological Education (ATE) centers and projects offer new materials, exemplary methods, and professional development.

Robert Noyce Teacher Scholarship Program (Noyce) provides funds to post-secondary institutions to support scholarships, stipends, and academic programs for STEM majors and professionals to become K-12 teachers.

Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM) supplies scholarships for academically talented, financially needy STEM students.

Improving Undergraduate STEM Education (IUSE) supports research and development leading to and propagating interventions that improve both the quality and quantity of STEM graduates.

SBIR/STTR Phase II-CC Supplements
The NSF has supplemental funding available to support these kinds of partnerships between small businesses (with active SBIR funding) and community colleges. There are supplements available to support internships by college instructors (RET), student internships (REU, VRS), and phase IIICC supplements to support partnerships. www/nsf.gov/eng/iip/sbir/Supplement
BATEC is the ATE National Center of Excellence for Computing and Information Technologies.

Our academic partners, across the country offer academic pathways for inner city students:

- Creating and offering authentic, industry-guided curriculum in Computer Science, Information Technology, & Web Development
- Designing and implementing complementary activities that generate awareness and increase interest in computing pathways and careers
- Conducting and disseminating actionable research about workforce requirements and labor market trends

**Workshop: Learning to Use the Raspberry Pi**
Monday, 8:30 to 12:00

**Workshop: A Hands on Introduction to Micro Controller Featuring the Arduino**
Monday, 1:00 to 4:30

**Session: A Hybrid Model for Curriculum Development Using Student & Faculty Teams**
Wednesday, 10:15 to 11:00

**Session: A Successful Collaboration to Expand K-12 Computer Science Outreach & Education**
Thursday, 9:15 to 10:00

**Research Report: Big Data Employment in the Information Economy**
BATEC Booth No. 611, Technology Showcase

**Research Report: CyberSecurity Defending Our Nation’s Assets**
BATEC Booth No. 611, Technology Showcase
Bio-Link: Next Generation National ATE Center for Biotechnology and Life Sciences

www.bio-link.org

Institutionalizes community college educational practices that make high-quality education and training in the concepts, tools, skills, processes, regulatory structure, and ethics of biotechnology available to all students

Instructs

Increases the number and diversity of well-trained technicians in the workforce

Meets the ever-growing needs of a continually evolving and diversifying industry for appropriately trained technicians

Employers
Working Connections events offer cutting-edge, cost-effective professional development that provides you with the expertise needed to teach the most in-demand technology topics.

Join us every summer at one of the three regional events!

**NORTH • TEXAS • SOUTH**

And don’t miss our annual winter workshop in Texas. Save the date!

**Winter Working Connections**
December 12-14, 2016
Frisco, TX

**SAVETHEDATE**
bit.ly/WinterWC16

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The Convergence College Network (CCN) connects you with IT educators from colleges around the nation as well as with resources that will enhance your IT program. Become a part of the CCN and enjoy access to:

- Robust network of innovative leaders who share instructional resources, strategies and materials
- Fully developed curriculum
- Free professional development with partial travel reimbursement
- Shared online technology resources such as virtual labs

**APPLYTOJOIN**
bit.ly/CCN-App

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Our National Business and Industry Leadership Team (BILT) provides the CCN with information on the current IT job market and emerging technology trends. Their unique insight identifies the essential knowledge, skills and abilities that students must possess to get hired and guides curriculum development.

If your IT program is not “owned” by the businesses that are hiring graduates, consider taking your existing advisory council to the next level by downloading our “step-by-step guide” to creating your own successful BILT.

**GETTHEGUIDE**
bit.ly/BILT-howto

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This material is based upon work supported by the National Science Foundation under Grant No. 1205077. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.
Great Job + Great Pay = Great Lifestyles

Connecting Manufacturers, Educators & Students with Florida’s High-Tech Workforce

CURRICULUM - OUTREACH - PROFESSIONAL DEVELOPMENT

For more information contact 813.259.6577/flate@fl-ate.org
Tuesday
July 26

PRECONFERENCE (must be registered to attend preconference events)

7:00 A.M.–6:00 P.M.
Registration (Grand Ballroom Foyer)

8:00–8:30
Continental Breakfast (Grand Ballroom 2; for morning workshop attendees)

8:30–Noon
PRECONFERENCE WORKSHOPS
Programmable Logic Controllers (PLC): Foundational Programming for Mechatronics and Automation (Commonwealth 1)
Never Go in With a Blank Piece of Paper: Getting the Right Information to Talk to Industry (Brigade, 2nd floor)
Experience Hands-On Virtual Laboratories in IT/Security and Learn About Free Curriculum and Labs (Smithfield)
NanoGold for Health and Diagnostics! Concepts, Applications, and Workforce Development (Rivers, 2nd floor)
Computational Thinking via Robotics Simulations (Birmingham)

Noon–1:00
Lunch on Your Own (Industry tour attendees will receive box lunches on their buses.)

Tuesday Afternoon

PRECONFERENCE INDUSTRY SITE VISITS
(Buses will board on Liberty Ave. Box lunches will be provided.)
1:00–5:00 (Bus will board at 12:45.)
Human Engineering Research Laboratory (University of Pittsburgh) and Tech Shop Pittsburgh Tour (in Pittsburgh’s Bakery Square Area)
1:00–5:00 (Bus will board at 12:45.)
Robotics at Carnegie Mellon University: National Engineering Robotics Center and the Robotics Institute
1:00–4:00 (Bus will board at 12:30.)
Babushka & Hard Hats Tour: Celebrating Pittsburgh’s Steel Heritage!
1:00–5:00 (Bus will board at 12:30.)
Frank Lloyd Wright’s Fallingwater: An Architectural Masterpiece Tour
Commonwealth 1

Programmable Logic Controllers (PLC): Foundational Programming for Mechatronics and Automation

This workshop will provide hands-on experiences for attendees interested in integrating PLCs into their courses. PLCs represent the control and communications vehicle for all industrial mechatronics systems. Students learning to work with automated systems must become competent with fundamental PLC programming logic and languages. Working in small groups, participants will practice basic ladder logic programming and conclude with a final (integrated) project. This hands-on experience will conclude with a short PLC application discussion of the feasibility of using small, inexpensive trainers to expand mechatronics educational opportunities for both students and educators. Attendees should bring their own laptops.

Marilyn Barger, Richard Gilbert, FLATE, Tampa, FL; Alex Anzalone, Hillsborough Community College; Ernie Friend, Florida State College, Jacksonville, FL; Dan Horine, Virginia Western Community College, Roanoke, VA; Doug Laven, South Central College, North Mankato, MN

Smithfield

Experience Hands-On Virtual Laboratories in IT/Security and Learn About Free Curriculum and Labs

This workshop will focus on virtual labs in emerging areas of IT/security including several Microsoft MCSE-related labs and the Internet of Everything (IoT). The session will also introduce 250 free virtual labs as well as over 50 free courses. Attendees should bring their own laptops.

Ann Beheler, National Convergence Technology Center (CTC), Frisco, TX; Bill Saichek, Orange Coast College, Costa Mesa, CA; Ernie Friend, Doug Moore, Florida State College, Jacksonville, FL

Rivers (2nd floor)

NanoGold for Health and Diagnostics! Concepts, Applications, and Workforce Development

Nanotechnology is gaining traction in several biological sectors. However, to create awareness at high school and undergraduate levels, there is an immense need for easy-to-access, interactive educational materials. This workshop will offer an opportunity to work with gold nanoparticles. Attendees should bring their own laptops.

Mrunalini Pattarkine, Harrisburg University of Science and Technology, Harrisburg, PA

Brigade (2nd floor)

Never Go in With a Blank Piece of Paper: Getting the Right Information to Talk to Industry

Working well with industry partners is critical to the success of any technician training program. Yet educators often don’t know where to find information or interface with industry personnel. A methodology has been developed that allows educators to find, mine, and consolidate skills, knowledge, and abilities that industry is looking for in employees. This workshop is not technology dependent and is applicable to multiple programs. Participants will learn and practice (on their own laptops) how to fill up the page with ideas and topics for discussion with industry partners.

Deb Newberry, Nano-Link, Rosemount, MN

Birmingham

Teaching Computational Thinking via Robotics Simulations

This workshop will present a Carnegie Mellon-developed set of tools and resources that include robotic simulation activities built using Unity game development software. The activities are part of an NSF Computing Education for the 21st Century project designed to teach robot mathematics, algorithms, decomposition, abstraction, and program flow. The labs emphasize the use of variables, parameters, functions, arrays, and a virtual global positioning system. Students play a robot game, solve a robotic pipeline explorer problem, develop their own bar code reader, and solve an automated driving challenge using an array of sensors, including virtual GPS.

Robin Shoop, Carnegie Mellon, Pittsburgh, PA
Preconference Site Visits

(Buses board on Liberty Ave. Participants will receive box lunches on their buses.)

Human Engineering Research Laboratory (University of Pittsburgh) and Tech Shop Pittsburgh Tour (in Pittsburgh’s Bakery Square Area)
1:00–5:00 (Bus will board at 12:45.)
This afternoon will bring you to Bakery Square to visit the University of Pittsburgh’s Human Engineering Research Laboratory (HERL) as well as TechShop Pittsburgh. HERL is a global leader in assistive technology research. HERL will provide attendees with meaningful insight regarding the use of technology to increase participation in everyday activities for individuals with disabilities. Participants will also experience laser cutting, hands-on plasma cutting, 3D printing, and much more at TechShop’s community-based workshop and prototyping 16,000-square foot-studio.

Robotics at Carnegie Mellon University: National Engineering Robotics Center and the Robotics Institute
1:00–5:00 (Bus will board at 12:45.)
Participants will explore two of Carnegie Mellon’s world renowned robotics sites. The Robotics Institute (RI) @ CMU had been leading the world in integration of robotic technologies into everyday life since 1979. Learn how CMU’s RI students, staff, and professors collaborate with Astrobotic to develop the space robotics rover for its inaugural lunar mission. CMU’s National Robotics Engineering Center (NREC) will offer participants a view of their 100,000-square-foot (renovated factory) site, which offers impressive amenities for developing, prototyping, and testing robots. NREC works closely with government and industry clients to develop and mature robotics technologies from concept to commercialization.

Babushka & Hard Hats Tour: Celebrating Pittsburgh’s Steel Heritage!
1:00–4:00 (Bus will board at 12:30.)
Visit three historic sites managed by Rivers of Steel National Heritage Area including a historic pump house and the region’s last standing blast furnace! Guests will enjoy an in-depth behind-the-scenes look at the workings of a steel mill and the history of Pittsburgh’s more than century-old connection to steel! The tour includes shuttle, entertaining tour guide, lunch, bottled water, and snacks.

Frank Lloyd Wright’s Fallingwater: An Architectural Masterpiece Tour
1:00–5:00 (Bus will board at 12:30.)
Visit Frank Lloyd’s Wright incomparable Fallingwater residence in the beautiful Laurel Highlands! Guests will have the opportunity to enjoy a guided tour of this architectural wonder of the modern world while learning the history of the Kaufmann family (of the department store fame) who had it built! Tour includes shuttle, entertaining guide, lunch, bottled water and snacks.
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New for Summer 2016

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The National Center for Optics and Photonics Education

Information
Photonics Technology
Technician Careers
Photonics-enabled Technologies

Technical Assistance
Program Feasibility and Planning
Curriculum Design and Teaching Materials
Laboratory Design

Professional Development and Training
Program Planning Workshops
Online Faculty Development Courses
Online Technician Education Courses

Resources
National Photonics Skill Standards for Technicians, 3rd Ed.
National Precision Optics Skill Standards for Technicians, 2nd Ed.
Skill Standards and Curriculum Materials for Integrated Photonics
Curriculum Guides for Photonics Systems Technicians and Precision Optics Technicians

Curriculum Materials
Fundamentals of Light and Lasers
Laser Systems and Applications
Precision Optics Series
Integrated Photonics
Mathematics for Photonics Technicians
Modules in Photonics Enabled Technologies:
Manufacturing • Environmental Monitoring
Biomedicine • Forensic Science and Homeland Security • Optoelectronics • Nanotechnology

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- Professional Development
- Industry-driven Curriculum
- Student Recruitment & Retention
- 2 + 2 + 2 Seamless Pathways

The SMART (Southeast Maritime and Transportation) Center is proud to be a National Science Foundation Advanced Technological Education (NSF ATE) Center. We are helping transform the future of the industry with a 21st century trained, maritime and transportation workforce.

We provide educators with career awareness and career pathway tools, classroom resources, a week-long summer institute, and connections with industry leaders.

Learn more at: 757-822-7485

www.maritime-technology.org
### Wednesday, July 27

**7:00 A.M.–5:00 P.M.**

- Registration *(Grand Ballroom Foyer)*

**7:45–8:30**

- Continental Breakfast *(Grand Ballroom 2–4)*

**8:30–9:45**

- Opening and Keynote Presentation *(Grand Ballroom 2–4)*

**9:45–10:15**

- Refreshment Break *(Grand Ballroom Foyer)*
- View Exhibits *(Grand Ballroom 1 and Kings Garden)*

**9:45–6:00**

- Exhibit Hall Open *(Grand Ballroom 1 and Kings Garden)*
- Caricature Artist 9:45–Noon / 1:00–6:00

**10:15–11:00**

1A What Businesses Want Your Grads to Know *(Sterlings 1)*
1B How AMTEC Is Using Data *(Commonwealth 1)*
1C Integrated Photonics for Technicians *(Smithfield/Ft. Pitt)*
1D Student Learning: A Hybrid Model *(Brigade, 2nd floor)*
1E Building on What Works *(Rivers, 2nd floor)*
1F Using Remote Access *(Birmingham)*
1G STEM and Entrepreneurship Wearables *(Sterlings 2 & 3)*
1H Funding Opps at NSF *(Commonwealth 2)*

**11:15– Noon**

2A Building a Successful Cyber Security Program *(Sterlings 1)*
2B NSF CC Innovation Challenge *(Commonwealth 1)*
2C Preparing Techs for Integ Photonics Mfg *(Smithfield/Ft. Pitt)*
2D Leveraging Industry Partners and Data *(Brigade, 2nd floor)*
2E Biotechnology Incubators at CC *(Rivers, 2nd floor)*
2F Sustainability and Emerging Technologies *(Birmingham)*
2G USA Mechatronics Community Exchange *(Sterlings 2 & 3)*

**Noon–1:00**

- Awards Luncheon *(Grand Ballroom 2–4)*

**1:15–2:00**

3A Best Practices in Social Media *(Sterlings 1)*
3B Nat’l Network Mfg Innovation *(Commonwealth 1; cont 2:15)*
3C LASER-TEC / U.S. Navy Partnership *(Smithfield/Ft. Pitt)*
3D The Road to Autonomous Vehicles *(Brigade, 2nd floor)*
3E NSF ATE Funding / Mentor-Connect *(Sterlings 2 & 3)*
3F NEATEC Learning Modules *(Birmingham)*
3G 360° eTECH High School Program *(Rivers, 2nd floor)*
3H Working Technicians Tell Their Stories *(Commonwealth 2)*

**2:15–3:00**

4A Academia / EMC Prepare Students for IT *(Sterlings 1)*
4B Nat’l Network Mfg Innovation *(Commonwealth 1; cont from 1:15)*
4C Opps for Unmanned Aircraft Sys Techs *(Smithfield/Ft. Pitt)*
4D Incorporating the Maker Movement *(Brigade, 2nd floor)*
4E Creating a Practical IT Bachelor’s Degree *(Rivers, 2nd floor)*
4F SCME’s Hands-online Academy *(Birmingham)*
4G So You Want to Be in Manufacturing? *(Sterlings 2 & 3)*
4H Increasing Female Enrollment in STEM *(Commonwealth 2)*

**3:00–3:45**

- Beverage Break *(Grand Ballroom Foyer)*
- View Exhibits *(Grand Ballroom 1 and Kings Garden)*

**3:00–6:00**

- View Poster Sessions *(Kings Garden)*

**3:45–4:30**

5A Teaching Cyber Security Across Disciplines *(Sterlings 1)*
5B Build-Your-Own Recruitment Video *(Commonwealth 1)*
5C Online Simulation Tools *(Smithfield/Ft. Pitt)*
5D Learning with Personal Devices *(Brigade, 2nd floor)*
5E Teaching Human Spaceflight *(Rivers, 2nd floor)*
5F Design for Improving Student Learning *(Birmingham)*
5G Logic Models *(Sterlings 2 & 3)*

**4:30–6:00**

- Exhibit Hall Reception *(Grand Ballroom Foyer)*
- View Exhibits/Poster Sessions *(Grand Ballroom 1 and Kings Garden)*
Jerry Volcy and the Spelbots

Empowering a New Generation

The SpelBots, the Robotics Team from Spelman College, is led by Jerry Volcy, Ph.D., faculty member in the computer and information sciences department. The Spelbots have many firsts to their credit: the first all-female, all African-American undergraduate team to qualify and compete in the 2005 International RoboCup four-legged robot soccer competition; first place in the RoboCup Japan 2009 Standard Platform League Nao League humanoid soccer championship; and the first and only historically black college or university selected to showcase their technology in the Education Technology Showcase in Washington, DC, to U.S. senators and the director of the National Science Foundation. Jerry Volcy and the SpelBots will tell their story about how they encourage students and young women of African descent to explore robotics and computer science.
Concurrent Sessions • 10:15–11:00

1A  Sterlings 1
How to Know for SURE What Businesses Want Your Grads to Know
Would you like to learn how to build solid relationships with businesses, getting vital information on what they are looking for in new hires? What if you could master the processes for skills validation and know that your graduates will have the skills they need to land entry-level positions? In this interactive session, presented by the National Convergence Technology Center, attendees will get hands-on practice in conducting a skills analysis session with business partners. Although the CTC is an NSF-funded IT Center, the techniques demonstrated will work for any technology discipline.

Ann Beheler, National Convergence Technology Center (CTC), Frisco, TX

1B  Commonwealth 1
How AMTEC Is Using Data to Improve Instructional Delivery and Student Performance
This session will describe AMTEC’s systematic assessment and evaluation process that was developed with industry input. Attendees will be provided with data-driven strategies that are currently being used by AMTEC to help improve students’ performance and ultimately worker competence. The session will describe the cutting-edge methodology and will include many examples on the use of these assessments.

Danine Tomlin, Katherine Manley, AMTEC, Versailles, KY

1C  Smithfield/Ft. Pitt
Integrated Photonics for Technicians Course
The recently announced $610 million Integrated Photonics advanced manufacturing initiative will require significant workforce development to provide technicians to work in silicon photonics fab facilities throughout the U.S. This new course can be inserted into existing associate degree programs in photonics, semiconductor manufacturing, nanotechnology, and advanced manufacturing. Participants will learn about the course content, required labs/equipment, prerequisites, strategies for inserting the course into existing programs, and job opportunities for completers.

Anca Sala, Baker College, Flint, MI; Taylor Jeffrey, OP-TEC, Waco, TX

1D  Brigade (2nd floor)
Student Learning and Faculty and Course Development: A Hybrid Model Using Student and Faculty Teams
Clark State Community College's Cyber-Pro program, established through an NSF ATE award, has experienced good success over eight years using combined student intern and faculty extern teams to create faculty learning and development opportunities. With the aid of BATEC in 2016, that approach has been expanded to place faculty and students together in a special summer-long Ethical Hacking program culminating in a Hack-a-thon. This presentation will provide an opportunity to learn about the blending of student learning with faculty development to create a new cyber security course that can be used by faculty at community colleges and high schools to teach and provide hands-on experience in ethical hacking.

Cathryn Balas, BATEC/Clark State Community College, Springfield, OH; Michael Qaissaunee, Brookdale Community College, Lincroft, NJ
Building on What Works: Creating Effective Career Pathways with Stackable Credentials

Stackable credentials represent an effective way for educational institutions to provide a wider range of students with opportunities to more quickly earn academic and industry-valued credentials. Using the SMART Center’s Maritime Technologies pathway as a case study backdrop, attendees will learn how to (1) evaluate courses and determine how they can be “stacked” to help students earn multiple certificates and degrees, (2) provide compelling evidence to administrators of the need for dual enrollment pathways, and (3) ensure that high school and college programs and pathways are aligned with industry standards and needs.

Barbara Murray, SMART Center, Virginia Beach, VA; Craig Hill, Portsmouth Public Schools, Portsmouth, VA; Ross Leach, AMSEC, Virginia Beach, VA; Guy St. John, Oceaneering International, Chesapeake, VA; Sarah Janes, San Jacinto College, Pasadena, TX; Kipp Snow, Anne Arundel, Arnold, MD

Using Remote Access to Bring High-Tech Equipment into Classrooms

Using distance technology for hands-on training and to perform outreach and recruitment to current and prospective students is at the cutting edge of education. Through this session you will learn how several geographically disbursed members of the NACK’s growing RAIN (Remotely Accessible Instruments for Nanotechnology) Network more fully leverage their equipment investment to access classrooms across the nation without leaving home. Come and learn how to bring RAIN experts into your classroom.

Robert Ehrmann, NACK, University Park, PA; Kristine Schroeder, SHINE, Seattle, WA; Jared Ashcroft, Pasadena City College, Pasadena, CA; Richard Hill, Erie Community College, Williamsville, NY; Frank Fernandes, Northcentral TechCollege, Wausau, WI; James Smith, Salt Lake CC, Salt Lake City, UT

STEM and Entrepreneurship Engagement Through Wearables

Activities are being developed to engage students in STEM through wearable product development and entrepreneurship activities. Student level is assumed to be high school or first and second year in college, not necessarily with an electronics background. It is also assumed that they are extremely Internet and mobile device savvy. For the wearable activity, the focus is on product realization involving sensors, intelligence, and communication. For the entrepreneurial activity, the wearable product forms the basis for the ideation and development of solutions that have market potential. Participants will be able to explore new activities for implementation in their classrooms and outreach programs.

Michael Lesiecki, MATEC, Phoenix, AZ

Funding Opportunities at the NSF: Programs of Interest to Two-Year Institutions

This session will provide an overview of programs at the National Science Foundation of interest to two-year Institutions. A main focus will be on Division of Undergraduate Education programs, but other programs will also be presented. Tips for crafting a competitive proposal will be provided.

V. Celeste Carter, Tom Higgins, National Science Foundation, Arlington, VA
Concurrent Sessions • 11:15–Noon

2A  Sterlings 1

Building a Successful Cyber Security Program
The session will review the resources, faculty development opportunities, and curriculum available for institutions developing or enhancing their cyber security programs. Representatives of each of the NSF ATE cyber security centers will present the services and products available through their centers. The session will include an overview of curriculum libraries, lab and activity collections, and faculty development workshops, along with an overview of curriculum frameworks, industry designations, and financial resources that are available.

John Sands, CSSIA, Palos Hills, IL; Philip Craiger, ACE, Daytona Beach, FL; Bob Spear, CyberWatch, Largo, MD; Corinne Sande, CyberWatch West, Bellingham, WA; Tom Pigg, CSEC, Jackson, TN

2B  Commonwealth 1

NSF’s Community College Innovation Challenge: Engaging Students in STEM Innovation and Entrepreneurship
The Community College Innovation Challenge (CCIC), co-hosted by NSF and the American Association of Community Colleges, invites community college students to propose innovative STEM-based solutions to real-world problems. This challenge enables students to discover and demonstrate their ingenuity in using science to make a difference in the world and to transfer knowledge into action. In this session, a team of students from Virginia Western Community College will demonstrate how they developed a solution to a problem at the nexus of food, energy, and water systems and won 2nd place in this year’s competition. The students will also share how they honed entrepreneurial and communication skills applicable to commercializing ideas, using technology for social applications, communicating with stakeholders, and creating business strategies.

V. Celeste Carter, NSF, Arlington, VA; Ellen Hause, American Association of Community Colleges, Washington, DC. Student Team Members: Adam O’Neal, Cody Djuric, Kari Stanley, Virginia Western Community College, Roanoke, VA

2C  Smithfield/Ft. Pitt

Preparing Technicians for Integrated Photonics Manufacturing: A Collaborative Effort of ATE Centers
The task of the $610 million Integrated Photonics Manufacturing Initiative (IPMI) is to package photonics components into integrated circuits, transforming high-performance computing and digital communications to increase broadband capacity tenfold. This innovation requires significant workforce development to provide technicians in silicon photonics fab facilities throughout the U.S. Six ATE centers are cooperating to define, design, and support multidisciplinary technician education and training. Technician programs that will be impacted by this are photonics, chip manufacturing, digital design/communications, nanotechnology, biomed, defense equipment, and multi sensor applications.

Dan Hull, OP-TEC, Waco, TX; Michael Lesiecki, MATEC, Phoenix, AZ; Bob Greer, NEATEC, Albany, NY; Gordon Snyder, OP-TEC, Waco, TX

2D  Brigade (2nd floor)

Leveraging Industry Partners and Research Data to Create Regional Educational Ecosystem Incubators
Learn about the strategic blueprint SCTE developed to leverage industry relationships and research data to identify where “centroids” of technician demand and academic partners align. SCTE is on a journey connecting large groups of industry partners with academic professionals to build regional supply chain technician workforce pipelines. Learn about the techniques, tools, data, and resources that were developed for this collaborative process. Hear Target and FedEx Ground executives discuss their influence, involvement, and experiences behind the project. Takeaways: sample trade ring maps, state wage and employment data, national industry real estate data, and the creative process blueprint.

Steve Harrington, Supply Chain Technology Education, Norco, CA; Phil Jones, Target Corporation, Minneapolis, MN; John Sickmeier, FedEx Ground, Sacramento, CA
11:15–Noon Concurrent Sessions (continued)

2E   Rivers (2nd floor)

**Biotechnology Incubators at Community Colleges: Update and the Search for New Partners**

Attendees will learn about biotechnology incubators and similar business models at community colleges. The focus will be on what is happening at Austin Community College as the result of a $4.9M grant from the state of Texas, and at Bluegrass Technical and Community College in Kentucky, as a result of NSF ATE’s funding of the AC2 Bio-Link Regional Center. Attendees will explore how they can establish similar models at their institutions, and will brainstorm how more institutions can be recruited to establish similar activities.

- **Linnea Fletcher**, AC2 Bio-Link Regional Center, Spicewood, TX; **Jeanne Wages**, Austin Community College, Austin, TX; **Tyler Drake**, Bluegrass TCT, Lexington, KY

2G   Sterlings 2 & 3

**Developing a USA Mechatronics Community Exchange**

The Mechatronics Community Exchange (MCE) is a growing grassroots effort to regularly bring together educators in the emerging field of mechatronics using a facilitated monthly conference call or online meeting. Participating educators mentor one another and share issues and resources pertaining to mechatronics, automation, and related programs. The presenters will cover the nuts and bolts of the MCE and its history and will share examples of successes and future plans, including MCE’s growing synergy with Fab Labs, innovation zones, and maker spaces.

- **Dan Horine**, Virginia Western CC, Roanoke, VA; **Greg Chapman**, Gateway Tech College, Sturtevant, WI; **Jim Janisse**, United States Fab Lab Network (USFLN), Grafton, WI; **Marilyn Barger**, FLATE, Tampa, FL

2F   Birmingham

**The Three Legged Stool of Sustainability and Emerging Technologies**

In the non-NSF world the word “sustainability” refers to the three-legged stool of economic, environmental, and societal aspects associated with technology. Most recently these aspects of sustainability have been applied to emerging technologies such as biotechnology, photonics, and nanotechnology. Sustainability, in this definition, takes into account regulatory and intellectual property, cost of materials, product life cycle, societal and cultural norms, health and safety, and other nontechnical factors that can drive the success or failure of a product. This presentation will provide examples of how sustainability aspects have been successfully included in a nanoscience AAS degree program. The examples and approaches discussed are applicable to multiple programs and technologies.

- **Deb Newberry**, Nano-Link, Rosemount, MN
Educator of the Year Award

Recipient: Dr. Anca Sala, Dean of Engineering and Computer Technology and Professor of Engineering at Baker College, Flint, Michigan

Anca Sala is Dean of Engineering and Computer Technology and Professor of Engineering at Baker College, where she has led the development and expansion of two-year programs in engineering and computer technologies. Over the past three years she has worked with OP-TEC, a National Science Foundation Advanced Technological Education (NSF ATE) center in optics and photonics, to develop an associate degree program in optics and photonics.

Sala is a leader in the OP-TEC Photonics College Network (OPCN), an association of postsecondary photonics technician educators organized and operated by OP-TEC. She serves as committee chair for creating and identifying technical webinars for faculty professional development and represents Baker College as a partner college for the NSF ATE Midwest Center for Optics and Photonics Education.

Sala is working with OP-TEC and other NSF ATE centers to provide national leadership in technician development for the recently formed Integrated Photonics Manufacturing Initiative (IPMI), a $510 million project designed to replace copper in conventional chips with lasers and optical waveguides. With the participation of over 200 industries, research labs, and universities, IPMI will develop skill standards, design curriculum, develop teaching materials, and train faculty at two-year colleges to address current and future technician workforce needs.

Sala is authoring modular teaching materials for the nation’s first technician course in Integrated Photonics. In a presentation at the HI-TEC 2016 conference, she will introduce this new course to educators and administrators in optics, photonics, nanotechnology, semiconductor manufacturing, mechatronics and advanced materials technologies.

Innovative Program Award

Recipient: Mentor-Connect: Leadership Development and Outreach for ATE

Mentor-Connect advances technology education by helping educators at two-year colleges focus on technician education and benefit from the National Science Foundation Advanced Technological Education (NSF ATE) program. Mentor-Connect seeks two-year colleges that have never received NSF grant funding and mentors them in developing projects and writing competitive grant proposals.

Through Mentor-Connect, highly experienced members of the NSF ATE community serve as mentors for participating teams throughout a ten-month mentorship that focuses on faculty development. The project team provides technical assistance; step-by-step instructions; resources to guide the grant development, submission, and funding processes; and a just-in-time help desk.

Knowledge transfer and leadership development result from this process, launching a new cadre of technician education practitioners who are learning from and contributing to the work of the NSF ATE program.

Mentor-Connect is increasing the geographic diversity of colleges submitting proposals to the NSF ATE program. The 79 colleges in the first four Mentor-Connect cohorts represent 27 states. Each participating college
is located in a geographic area where there have been no previous NSF ATE grant awards or none in the past ten years. There is also evidence of improvement in the quality of NSF ATE proposals as a result of Mentor-Connect. More than 90 percent of the 61 colleges in the first three Mentor-Connect cohorts submitted NSF ATE grant proposals. To date, 22 (61 percent) have been awarded grants.

Industry Recognition Award

Recipient: Terry M. Iverson, Iverson & Company

Terry Iverson’s nationally competitive company in Illinois has a strong machine and machine tool customer base in the tri-state region of Illinois, Indiana, and Wisconsin. Iverson works closely with community and technical colleges to help meet their equipment needs as well as to connect educators to industry partners. Iverson is the founder of Champion Now! (http://www.championnow.org/), an advocacy organization dedicated to changing people’s perceptions of manufacturing.

In partnership with other companies, Iverson has set up innovative internship programs in his region, hosted interns at his company, and made numerous presentations to students, educators, and the public in support of the manufacturing industry and manufacturing careers. He is a strong supporter of MFGDAY nationally and locally and hosts educators and students at his facility throughout the year. He has made invited presentations to the Small Business Committee of the U.S. House of Representatives on manufacturing as an economic driver and writes essays and editorials on manufacturing and its workforce. He recently completed a term on the board of directors of the Association for Career and Technical Education (ACTE) Foundation. He is an outspoken advocate of the National Science Foundation Advanced Technological Education (NSF ATE) program and ATE centers.

Industry Recognition Award

Recipient: Brad Mason, SMART Center

Brad Mason is a tireless champion of education within the maritime and transportation industry. As chairman of the SMART Center’s Maritime Technologies (MariTech) Consortium, he invests significant time each month leading consortium meetings to ensure a high degree of collaboration between formerly competing employers in the maritime and transportation industry.

Under Mason’s joint leadership (with Barbara Murray), the Maritime Technologies Consortium developed the first Maritime Technologies Pathway featuring stackable credentials. The SMART Center has increased the enrollment of women, veterans, first-generation college students, dual/concurrent enrolling high school students, and members of underrepresented populations in maritime technologies programs at partner colleges in Virginia, Texas, and Maryland, as well as their feeder high schools.

Mason contributed to the development of new curriculum by the SMART Center (MAR 120 – Introduction to Ships and Ship Systems) and modification of Marine Blueprint Reading curriculum. He also ensures that his staff serves as SMEs when expertise is needed for curriculum development.

As Chair of SMART’s MariTech Consortium, Mason assisted the SMART Center in scaling its work to Baltimore, Maryland (with partner Anne Arundel Community College), and Houston, Texas (with partner San Jacinto College), to expand into two additional industry sectors: vessel operations and port logistics.
Using Best Practices in Social Media to Increase Your Program’s Student Enrollment

Through the NSF-ATE funded Social Media Research project, partners Education Development Center and Collin County Community College are exploring the extent to which colleges can increase enrollment by employing social media strategies that have been identified as best practices. The session will present planning tools, developed with the assistance of nationally recognized social media experts, that can help colleges develop effective social media strategies. Presenters will share social media plans designed by three colleges using these tools and will provide preliminary observations on the effectiveness of the plans.

Joe Ippolito, Education Development Center, Waltham, MA; Ann Beheler, CTC, Frisco, TX; Gordon Snyder, OP-TEC, Waco, TX

LASER-TEC and the U.S. Navy Partnership Reduced the Cost of College Textbooks

The high cost of textbooks is very often an obstacle to students’ education. The United States Navy, the Department of Energy, and other federal agencies have dozens of instructional modules available in the public domain. LASER-TEC updated the U.S. Navy module on fiber optics and added pedagogical features needed to turn a simple manual into a graphics-rich, state-of-the-art textbook. The entire U.S. Navy electronics technology library (24 modules) will be presented along with technical libraries from the U.S. Department of Energy. Learn how to update public domain works for your students and receive a free copy of the textbook.

Chrysanthos Panayiotou, Natalia Chekhovskaya Kearney, LASER-TEC, Fort Pierce, FL

The Road to Autonomous Vehicles

Cars are rapidly becoming more automated and connected, leading ultimately to fully autonomous (self-driving) cars. Find out what drives this technology and how it impacts society. Also learn about the challenges yet to be solved. Discover the new curriculum being developed to prepare technicians for work in this area.

Robert Feldmaier, Center for Advanced Automotive Technology, Warren, MI
1:15–2:00 Concurrent Sessions (continued)

**3E  Sterlings 2 & 3**

**NSF ATE Funding- Increase Your Odds of Success with Grant Proposal Development Help from Mentor-Connect: Get a Mentor…Become a Leader**

The NSF-funded Mentor-Connect project can help you prepare a competitive proposal for a “Small Grant for Those New to ATE”—a special funding track in the NSF ATE program. This small grants opportunity is designed for institutions that have not received NSF funding in the past 10 years. Participants will be invited to get a closer look into how the NSF ATE program is using one-on-one mentoring to assist those seeking ATE funding, as well as receive self-help resources, and hear insights from those who have benefitted from Mentor-Connect. Learn how rising leaders are contributing to the success of the program.

Elaine Craft, Charlotte Forrest, SC ATE Mentor-Connect, Florence, SC; V. Celeste Carter, National Science Foundation, Arlington, VA

**3G  Rivers (2nd floor)**

**360° eTECH High School Program**

This session will share the process of implementing the 360° eTECH Online and Hands-On Manufacturing Education Program, covering topics such as the program proposal, outreach plan, marketing methods, and student registration. The presenter will share identified opportunities for improvement, successes, and Fall 2016 plans such as the expansion of welding labs in the state to accommodate students in multiple geographic locations. The session will also review the 360° eTECH student portal, its benefits, and key resources to design the portal. Attendees will gain knowledge of how to implement a consortium-based technical program at high schools. Each will receive a program brochure and list of key contacts.

Jeremy Leffelman, 360° Manufacturing and Applied Engineering Regional Center of Excellence, Bemidji, MN

**3F  Birmingham**

**NEATEC Learning Modules: Use and Impact**

NEATEC Learning Modules (NLM) are self-contained units that can be used to supplement grades K-12 science, math, and technology lessons. Covering topics in nanotechnology, semiconductors, mathematics, general science, and technology, they are intended to generate student interest in nanotechnology as a career field. Each module includes background information, a teacher guide, a student guide, a lab kit, a list of teacher and student resources, and a PowerPoint presentation for instruction. This session will focus on module impact inside and outside the classroom. Participants will leave the presentation with sample module booklets and information on how they can receive module training and borrow instructional materials. The kits and training are provided at no cost to the participants.

MaryAnn Nickloy, Kelly Fahrenkopf, NEATEC, Albany, NY

**3H  Commonwealth 2**

**Learning from Working Technicians Who Tell Their Stories from ATE Programs**

Back by popular demand, this session features technicians who learned critical skills at community colleges. The technicians share their stories with each other in a unique “fishbowl” session. Following the interactive discussion, the audience will be invited to ask questions and make comments. The process is one that is used in industry to build leadership skills. The interactive nature of the session provides an opportunity for industry representatives and educators to hear the perspectives of former students who are now working technicians.

Facilitators: Elaine Johnson, BioLink National Center, San Francisco, CA; Terryll Bailey, The Allison Group, Seattle, WA. Technicians: Jeanine Pebbles, Lawrence Livermore National Laboratory, Livermore, CA; Mavon Copeland, Nissan North America, Inc, Smyrna, TN; Michael Ernesto Carlos, Walmart Fulfillment, Chino, CA; John Crawford, SCHOTT North America, Boston, MA
Concurrent Sessions • 2:15–3:00

**4A  Sterlings 1**

How Can Academia and EMC Partner to Help Prepare Students for IT Careers?

Learn about the free technology-based courses (storage, cloud, and data science) that are available to enable students to develop highly marketable knowledge and skills to address the IT industry’s top concerns. In this session, we will present the NETLAB+ storage and cloud lab libraries that support the EMC ISM and CIS courses. In addition, EMC will briefly explain how you can adopt these courses as a participant of the EMC Academic Alliance program.

Kim Yohannan, EMC Corporation, Franklin, MA

**4B  Commonwealth 1**  
Continued from 1:15

National Network for Manufacturing Innovation (NNMI)

There are now seven existing and two pending NNMI Institutes. Each one has a defined, requisite workforce development component designed to help serve the needs of these emerging sectors. Part I of this two-part session will give an overview of the institutes, focusing on research and new technological approaches in advanced manufacturing. Explore the emerging technologies educators should consider incorporating into their curriculum. Part II directly addresses the strategy that each institute is pursuing to build a pipeline of talent that can support advanced manufacturing. Discover opportunities to link with these institutes to expand the talent pipeline for our community college graduates.

Michael Lesiecki, MATEC, Phoenix, AZ; Marilyn Barger, FLATE, Tampa, FL. Panelists: Glenn Daehn, The Ohio State University, Columbus, OH; John Muth, PowerAmerica, Raleigh, NC

**4C  Smithfield/Ft. Pitt**

Revolutionary Opportunities for Highly Educated Unmanned Aircraft Systems Technicians

This session will share information about unmanned aircraft systems (UAS) and the dynamically changing environment surrounding this disruptive technology. UAS, often referred to as “drones,” are becoming more widely accepted in commercial sectors. UAS technology is positively impacting and expanding the capabilities of businesses that require technicians with multidisciplinary technical proficiencies. Many colleges are integrating UAS technology into their programs. The presenter will discuss approaches to academic modeling for UAS education. Takeaways will include an overview of UAS technology, how commercial sectors are adopting UAS technology, how this affects education, and the implications of a changing regulatory environment.

Jonathan Beck, Northland Community and Technical College, Thief River Falls, MN

**4D  Brigade (2nd floor)**

Incorporating the Maker Movement into Technology Program Recruitment

Have you considered the Maker Movement as a way to showcase your technology programs? A Maker Faire provides an engaging venue in which educational organizations partner with industry and provide interactive, hands-on outreach activity in their communities. Learn how to plan a Mini Maker Faire with the objective of reaching an audience that may not attend typical college recruitment and outreach events, especially events that focus on technology programs. Each attendee will receive a worksheet for identifying available resources, a maker faire implementation guide, a list of suggested evaluation techniques, and a marketing plan.

Karen Wosczyna-Birch, Wendy Robicheau, Regional Center for Next Generation Manufacturing (RCNGM), Farmington, CT; Eric Flynn, Gateway CC, New Haven, CT; John Birch, The Birch Group, Farmington, CT

Join the HI-TEC Twitter stream to win a $50 Amazon gift card at the Thursday Keynote Luncheon! Follow us on Twitter @Hi_Tec. A monitor showing the Twitter stream will be on display in the Grand Ballroom Foyer. #highimpact2016

Don’t miss the Exhibit Hall Reception 4:30–6:00.
Creating a Practical IT Bachelors Degree: Partnership with Community Colleges

Creating a reasonable pathway to an IT bachelor’s degree can be difficult. Many colleges and universities will not accept skill-oriented IT courses from community colleges. Learn how to create or find a suitable program for your students to move ahead.

David Keathly, Convergence Technology Center (CTC), Denton, TX

SCME’s Hands-online Academy: A Remote Approach to Hands-on Instruction

This presentation will discuss how the Southwest Center for Microsystems Education (SCME) has created a distance learning academy, how the center has transferred its live hands-on workshops to online hands-on instruction, and how this has expanded SCME’s Community of Practice. Attendees will be provided with access to all of SCME’s hands-online courses, and the opportunity to receive a free kit corresponding to each course. The kits enable participants to experience first-hand the remote instruction that SCME’s Hands-online Academy offers.

Barbara Lopez, Matthias Pleil, Southwest Systems for Microsystems Education (SCME), Albuquerque, NM

So You Want to Be in Manufacturing?

Are you thinking of creating or revamping a manufacturing program? Due to the resurgence of manufacturing programs, MatEdU has become a resource for equipment information, lab layouts, and course content. In response to FAQs, MatEdU developed a pre-planning tool that sparks conversations among potential stakeholders. Participants will experience using the preplanning tool, have an opportunity to add to it, and contribute to the FAQs.

Mel Cossette, Robin Ballard, National Resource Center for Materials Technology Education (MatEdU), Lynnwood, WA

Increasing Female Enrollment in Your STEM Programs

Asheville-Buncombe Technical Community College (A-B Tech) has received two NSF ATE grants focused on recruiting and retaining females in STEM programs. The grants are titled “Skilled Workers Get Jobs: Recruiting Women and Retaining ALL Students” and “Skilled Workers Get Jobs 2.0: Appalachian Impact.” In the identified programs the number of female students increased from 39 to 75 in two years. This interactive session will share A-B Tech’s recruitment strategies. Attendees will gain ideas and materials they can use to increase female enrollment.

Pamela Silvers, Steven Marcus, Jim Sullivan, A-B Tech, Asheville, NC
Concurrent Sessions • 3:45–4:30

5A  Sterlings 1

Teaching Cyber Security Across the Disciplines with a Focus on Women and Minorities

Cyber security has become a prevalent topic in many colleges, but how it should fit into the overall educational process is still not fully understood. A cyber security project at the University of Hawaii Maui College, funded by the NSF SFS program, spans multiple disciplines and targets women and minorities. This session will highlight project findings in social engineering, penetration testing, and Bluetooth Low Energy (BLE) beacons. Attendees will learn about cyber security issues and concerns pertaining to Estimote, RadBeacon, and other BLE beacons in retail locations, as well as the use of stealth tools such as the USB Rubber Ducky. The session will also provide examples and training handouts for classrooms and the workplace.

Debasis Bhattacharya, University of Hawaii Maui College, Kahului, HI

5B  Commonwealth 1

Build-Your-Own Recruitment Video- ATETV Customization Tool Now Available

The SC ATE National Center for Expanding Excellence in Technician Education (creators of TeachingTechnicians.org) and Pellet Productions, Inc. (creators of ATETV.org) introduce a turnkey customizable online tool that will help educators stimulate career interest and recruit students into technician education programs. The tool and repository of micro-content video snippets for building videos are now available free for educator use. Participants will see a demo of the customization user interface for building their own locally-specific videos. Tips for effective video marketing and customization options for programs and institutions will also be shared.

Anthony Manupelli, ATETV, Reading, MA; Elaine Craft, SC ATE, Florence, SC

5C  Smithfield/Ft. Pitt

Using Free Online Simulation Tools in the Classroom and Beyond

If you’re not taking advantage of free online simulation tools, you are missing out on teaching possibilities you probably never even imagined. No matter what you teach—optics, electricity, biology—online simulation tools can provide you with a resource that goes way beyond play-and-learn teaching. Learn how in this informative presentation.

Dorian McIntire, Tri-County Technical College, Pendleton, SC

5D  Brigade (2nd floor)

Create Opportunities for Learning with Personal Devices

Join us for an interactive session utilizing free web-based tools that engage learners. These tools, which are available via any Internet-ready device, can also be used in the workplace for trainings, meetings, and communication forums. Please bring your Internet-ready device to try some of the tools presented. Attendees will be encouraged to participate in a discussion about educating and training the millennial generation and will leave the session with a variety of resources they can adapt to their classrooms or workplace situations.

Juel Smith, Community College of Allegheny County, Monroeville, PA

5E  Rivers (2nd floor)

Teaching Human Spaceflight in a Secondary Classroom

This presentation will introduce tools that will help STEM middle and high school educators teach human space flight and encourage students to consider careers in the aerospace industry.

Gregory Cecil, SpaceTEC, Cape Canaveral, FL
3:45–4:30 Concurrent Sessions (continued)

**SF  Birmingham**

**Universal Design for Improving Student Learning... Not Just for Deaf and Hard-of-Hearing Students**

Universal Design for Instruction (UDI) is an approach to designing course instruction, materials, and content to benefit people of all learning styles. Attendees will experience what it is like to be a deaf student in a STEM class followed by a discussion of the UDI principles that could be used to improve the instruction and learning not only for the deaf student but for all students in the class. Online resources for improving existing teaching practice by providing better access to instruction for deaf students will also be shared.

**Donna Lange, Myra Pelz, DeafTEC, Rochester, NY**

**SG  Sterlings 2 & 3**

**Logic Models: The Swiss Army Knife of Project Planning and Evaluation**

A logic model is a graphic depiction of how a project translates its resources and activities into outcomes. Logic models are useful tools for succinctly communicating project goals and activities, but they have many other applications. They provide a foundation for a project evaluation plan (and subsequent reporting) and can be used to organize the content of a grant proposal. In this session, participants will learn the basics of how to create a logic model and we will demonstrate its use for planning a project evaluation and organizing a grant proposal. Participants will receive the Evaluation Planning Checklist for ATE Proposals and ATE Project Logic Model Template.

**Kelly Robertson, Lyssa Wilson, EvaluATE, Kalamazoo, MI**

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**4:30–6:00**

**Exhibit Hall Reception**

**Grand Ballroom 1 and Kings Garden**

You don’t want to miss the Exhibit Hall Reception for an opportunity to network with your colleagues from around the nation and a variety of vendors showcasing their latest products. There will be plenty of good food on hand!
Increasing Technician Efficacy through a Comprehensive Cycle of Design Lens

Using a pedagogical framework that includes the engineering cycle of design, Wake Technical Community College’s Mechanical Engineering Technology (MET) program culminates in a capstone project course that utilizes 3D printing technology to provide proof of concept. The course is adjudicated by industry stakeholders and provides a complete portrait of the ebbs and flows of engineering design and delivery. This poster will display pre- and post-assessment information about student perceptions of design, word clouds from student reflective practice assignments, and data about how the experience shaped and concluded their time in the MET cohort.

Patricia Godin, Russell Wahrman, Wake Technical Community College, Raleigh, NC

Convergence Technology Students Present a New Perspective

Student representatives from schools in the CTC’s Convergence College Network (CCN) community of practice will provide an overview of recent research, learning projects, and career opportunities in the information communications technology space.

Divya Tomar, El Centro College, Dallas, TX; Comfort Benton, Collin College, Frisco, TX

Introducing Single-Use Bioreactor Technologies Into the Biomanufacturing Classroom

An increasing number of biotechnology companies are introducing single-use (disposable) technologies into their biomanufacturing process. These technologies reduce upfront capital costs, decrease manufacturing times, and reduce the risk of cross-contamination of products. They also eliminate the need for cleaning and sterilization, reducing the use (and cost) of water, cleaning solutions, steam, and energy. The introduction of these technologies into the classroom better prepares students to work with this innovation.

Jim Dekloe, Solano College, Fairfield, CA

Practicing Necessary Employability Skills Through Real-World Cyber Security and Mechatronics

Responding to employers’ call for improved employee soft skills, this session will address your questions about “Necessary Skills Now,” a new NSF ATE project that involves a diverse team of educators and employers collaborating to develop and pilot curricula in support of classroom scenarios for two representative industries: cyber security and mechatronics. When completed, these curriculum developments and accompanying faculty training sessions will serve to improve the most sought-after employability skills for future workers in these two fields. The project is led by CORD in partnership with three NSF ATE centers: FLATE (Florida Advanced Technological Education Center), SC ATE (South Carolina Advanced Technological Education Center), and CSSIA (Center for Systems Security and Information Assurance).

John Chamberlain, Dick Hinckley, CORD, Waco, TX

Expanding Geospatial Opportunities for High School and Community College Students in Western New York

With support from the National Science Foundation Advanced Technological Education program, Monroe Community College is building a geospatial career pipeline between high schools, our GIST (Geospatial Information Science and Technology) certificate program (“Get the GIST”), and the geospatial workforce. In 2015, after being trained in ArcGIS Online, cohort 1 teachers implemented a GIS activity in their fall classrooms. Four cohort 1 teachers are planning to teach a dual-credit course in introductory GIS. High school students coming to MCC with dual credit will have an increased awareness of geospatial technology and a head start in earning the GIST certificate.

Heather Pierce, Jonathon Little, Monroe Community College, Rochester, NY
STEM Camps: Collaboration Is Key!
The Advanced Cyberforensics Education Consortium, in conjunction with the Florida Cyber Alliance, has implemented a yearly cyber camp for high school students at Daytona State College. In this session, we will highlight the key elements of our cyber camp. Over the course of three years our camp has grown in overall enrollment and retention as well as female participation. We will showcase techniques for putting on a successful STEM summer camp utilizing collaborative efforts to minimize costs and increase participation.

Emily Coppa, Patrick Vilkinofsky, Advanced Cyberforensics Education Consortium (ACE), Daytona Beach, FL

Undergraduate Research, Outcomes, and Assessment Tool Development
Members of the REVISION team will discuss implementation of HHMI’s SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) program, as well as a summer internship program at a community college. We will also discuss student outcomes and offer advice on how to start course-based research. Finally, we will discuss a new assessment tool for evaluating the deeper learning of course content through the SEA-PHAGES research experience. The audience will take away information concerning undergraduate research programs. We will also provide resources for starting such programs as well as a handout on our new assessment tool.

Deborah Overath, Robert Hatherill, Daiyuan Zhang, Del Mar College, Corpus Christi, TX

The SLCC Medical Device Training Program Embraced by Local Industry
Salt Lake Community College (SLCC) developed its Medical Device Manufacturing program as part of the Community College Consortium for Bioscience Credentials (c3bc). Many local manufacturers have partnered with SLCC to build the skills of their workers. The Manufacturing Institute recently released a spotlight report titled “Companies Benefit from Medical Device Program as Incumbent Worker Training.”

Jie Gu, c3bc, SLCC, Salt Lake City, UT

Working Partners Research Project: How Does Your Program Connect With Industry?
The Working Partners Research Project is collecting and examining data from industry partnerships across the NSF ATE community and reporting on the impact and broader implications of these models. Come ask questions about the research, share your industry partnership stories, and discuss the challenges and impacts of connecting educational programs to industry.

Mary Slowinski, Bellevue College, Seattle, WA; Rachael Bower, ATE Central, Madison, WI

Conformal Charge Barrier Layers to Minimize Current in Organic Electro-Optic Devices
Organic electro-optic (EO) molecules have several advantages over incumbent inorganic EO materials, and are slated to be used in modulators for much faster next-generation fiber-optic telecommunications networks if their performance can be further improved. Here we investigate increasing the efficiency of EO molecules by reducing current leakage with conformal materials that are suitable for real-world modulator devices.

Scott Merry, SHINE, North Seattle College, Seattle, WA

Can the Carbon Fixation Rate Be Increased in Cyanobacteria by Subjection to CO₂ Limited Environment?
It has been acknowledged that improving the efficiency of photosynthesis could be one of many steps needed toward a net reduction in atmospheric carbon dioxide. Cyanobacteria contribute an estimated 25 percent of global photosynthesis. Under ideal conditions, their rate of growth and reproduction make cyanobacteria excellent organisms for testing. This research project investigates 1) whether cyanobacteria in decreasing carbon dioxide environments will mutate to improve their carbon fixing efficiency, 2) whether those mutants can survive in present-day atmospheric conditions, and 3) whether those mutant survivors can fix carbon at an increased rate compared to control cyanobacteria.

Joseph Amann, SHINE, North Seattle College, Seattle, WA
Microsystems and Nanotechnology Industry Interactive Maps and Workforce Survey Results

Over 3000 micro/nano and related industries are part of the high-technology industry landscape of the United States. The data presented includes interactive online industry maps and detailed 2016 industry workforce needs survey results. Statistical analysis and technician hiring methods and projections will also be provided. This is a great tool and resource for students looking for careers in micro/nano and related fields (e.g., photonics and electronics).

Matthias Pleil, Magesh Rajasekaran, Barbara Lopez, SCME, Albuquerque, NM

Accelerating Automation: Customize Your Learning Schedule With Virtualization and Open Labs

HOME4TECHs is an employer-driven, student-centered approach to educating technicians in automation technology. This session will demonstrate how NSCC is utilizing hybrid learning with virtual farm simulations in a competency-based education model. Employed students can balance life demands while seeking education to improve their skills. Online coursework is complimented with dynamic lab simulations that can be accessed 24/7 from any location with Internet access. Students practice lab exercises until confident, then self-schedule time in open labs to complete hands-on competency-based assessments. These accelerated learning modules meet employer needs while allowing for students’ busy lives.

Tom Wylie, Ron Scozzari, Sarah Stubblefield, HOME4TECHs, Archbold, OH

How the Future Workforce Can Manage Industry Projects Now

This poster demonstrates the results of incorporating real-world technology projects into business and entrepreneurial training. Mechanical Engineering Technology and Manufacturing Engineering Technologies (MET2) projects are highlighted, showcasing the journey from project proposal to prototype manufacturing. Projects include the use of additive manufacturing, app development, microcontrollers, and other exciting technologies.

Karen Wosczyna-Birch, Wendy Robicheau, Regional Center for Next Generation Manufacturing (RCNGM), Farmington, CT; John Birch, MET2, Farmington, CT; Eric Flynn, Gateway Community College, New Haven, CT

NBC2’s Industry-Endorsed Biomanufacturing Curriculum for Technician Training

The Northeast Biomanufacturing Center and Collaborative, NBC2, is dedicated to educating and training an advanced technological workforce for the rapidly growing biomanufacturing industry. Working closely with representatives from the industry, NBC2 has established a Global Biomanufacturing Curriculum for the development of courses and programs designed to meet local and national industry needs. Curriculum units align with the 10 technician jobs that make up a biomanufacturing facility and contain the knowledge, hands-on skills training, and documentation required for each job. Newly available on the NBC2 website, each unit provides textbook chapters, online learning modules, and cutting-edge technical procedures and documentation.

Margaret Bryans, Linda Rehfuss, Jennifer Imbesi, Cianna Cooper, The Northeast Biomanufacturing Center and Collaborative (NBC2), Blue Bell, PA
Transformative Applied Learning Internships in Semiconductor Manufacturing

The objective of the NSF-funded SUNY Polytechnic-NEATEC semiconductor manufacturing internship program is to provide hands-on applied learning opportunities to students in two-year programs that lead to workforce development and career opportunities. The internship program, hosted in SUNY Polytechnic’s world-class clean rooms, offers approximately ten interns each spring the opportunity to train for ten weeks alongside workstation operators in industry-standard semiconductor facilities. We interview current students, graduates, and staff to examine how program learning objectives are achieved, analyze the role of our hands-on approach, examine student career readiness, and understand students’ perceptions to their own technical skills.

Daniel White, Robert Geer, Abe Michelin, SUNY Polytechnic Institute, Albany, NY

Development of Community College Cyber Security Program Integrating Energy Sustainability

Building a cyber security program from the ground up that integrates energy sustainability, K-12 outreach, training for high school teachers, and industry partnerships, LIGHTES2 is lighting the pathway to energy-efficient cyber security.

Peter Maritato, Nina Leonhardt, LIGHTES2, Suffolk County Community College, Selden, NY

CREATE Faculty Learning Projects: Adding an International Perspective to Renewable Energy Education

CREATE’S international educator projects were designed to provide renewable energy faculty participants with opportunities for 1) exposure to international renewable energy policies and practices, 2) expanding awareness of approaches to renewable energy education, and 3) increasing the international perspective of their programs. This session will present the results of a study completed in January 2016 that measured the long-term impact these projects had on participants’ teaching, curricular, and professional practices.

Kenneth Walz, Kathy Alfano, Mary Slowinski, California Regional Consortium for Engineering Advances in Technological Education (CREATE), Madison, WI; Roger Ebbage, Lane Community College, Eugene, OR

Using Geospatial Technology to Understand Student Enrollment Patterns

Colleges typically market themselves to their communities without fully understanding enrollment patterns within those communities. This poster will take an in-depth look at how the U.S. Census Bureau American Community Survey (ACS) and historical college enrollment patterns at the street level can help colleges and communities understand each other better, and help colleges can do more effective targeted marketing.

Vince DiNoto, National Geospatial Technology Center of Excellence (GeoTech), Louisville, KY

Exhibit Hall Reception

4:30–6:00

You don’t want to miss the Exhibit Hall Reception for an opportunity to network with your colleagues from around the nation and a variety of vendors showcasing their latest products. There will be plenty of good food on hand!
Gearing up for a globally competitive workforce.

AMTEC is a collaboration of community and technical colleges and industry partners who work together to prepare highly skilled technicians for work in automotive and advanced manufacturing industries. We provide:

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A National Science Foundation Regional Center dedicated to developing a pipeline of qualified photonics technicians to meet industry needs with an emphasis in laser materials processing in advanced manufacturing.

NEATEC is leading the way in developing model programs for serving the workforce development needs of nanotechnology and nanoelectronics 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.

Northeast Advanced Technological Education Center
Regional Center for Semiconductor and Nanotechnology Education

- Partner-based Experiential Learning
- Outreach, Awareness, Recruitment
- Attracting students to STEM careers

NSF
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Albany, New York

www.neatec.org
Nuclear Mavericks describes the trials and tribulations of 9 nuclear pioneers but can be used in all STEM introductory courses to impart a sense of historical pride and ownership.

To order books for your school, visit GoNuke.org.

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SHINE promotes awareness of nanoscience, provides students and educators with state-of-the-art skills and resources, and connects nanotechnology stakeholders in the Pacific Northwest.

To learn more about SHINE’s offerings contact us at, SHINE@NORTHSEATTLE.EDU or visit WWW.SEATTLENANO.ORG

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One of the Seattle Colleges

This material is based upon work supported by the National Science Foundation under Grant Number 1204279
Thursday
July 28

7:30–1:00
Registration (Grand Ballroom Foyer)

7:30–8:15
Continental Breakfast (Grand Ballroom Foyer)
View Exhibits (Grand Ballroom 1 and Kings Garden)

7:30–Noon
Exhibit Hall Open (Grand Ballroom 1 and Kings Garden)

8:15–9:00
6A Teaching Microsoft Courses Online (Sterlings 1)
6B Recruiting: The NCWIT Approach (Commonwealth 1)
6C Supportive Industry Partnerships (Smithfield/Ft. Pitt)
6D UDL: Just the Tip of the Iceberg (Brigade, 2nd floor)
6E Biomedical at St. Petersburg College (Rivers, 2nd floor)
6F Internat’l Workforce Ed Skill Standards (Birmingham)
6G Student Internship Opps with NASA (Commonwealth 2)

9:15–10:00
7A K-12 Computer Science Outreach and Ed (Sterlings 1)
7B Python Scripts in Geospatial Technology (Commonwealth 1)
7C Economic Impact of High-Tech Ed (Smithfield/Ft. Pitt)
7D Learning Biology Through 3D Printing (Brigade, 2nd floor)
7E Professional Development / E-Learning (Rivers, 2nd floor)
7F From Blah to Bodacious (Sterlings 2 & 3)
7G Sustainable Tech in Adv Transport / Energy (Birmingham)

11:30–12:15
9A Creating an Online Bachelor’s Degree (Sterlings 1)
9B Open Badges: The Devil Is in the Details (Commonwealth 1)
9C Photons Entrepreneurship 101 (Smithfield/Ft. Pitt)
9D Teaching the Internet of Things (Brigade, 2nd floor)
9E VESTA Field Practicums (Rivers, 2nd floor)
9F Creating Sustainable Pathways (Sterlings 2 & 3)
9G Inside the Mind of a Maintenance Tech (Birmingham)
9H NSF ATE Coordination Network (Commonwealth 2)

12:30–1:30
Keynote Luncheon (Grand Ballroom 2–4)

1:45–2:30
10A LEAN Internship Project (Sterlings 1)
10B Student Ownership in STEM Learning (Commonwealth 1)
10C Mission Critical Operations Curriculum (Smithfield/Ft. Pitt)
10D Communities of Practice (Brigade, 2nd floor)
10E Hands-on Tools in Mechatronics (Rivers, 2nd floor)
10F Teaching the Internet of Things (Sterlings 2 & 3)

2:30–2:45
Refreshment Break (Grand Ballroom Foyer)

2:45–3:30
11A Capstone Project for Networking Courses (Sterlings 1)
11B Mini-Cube Program (Commonwealth 1)
11C Creating Future Scientists (Smithfield/Ft. Pitt)
11D Nat’l Center for Materials Tech Ed (Sterlings 2 & 3)
11E Effective Student Recruitment (Commonwealth 2)

3:45–4:30
12A Windows Command Line Interface (Sterlings 1)
12B Tech Enabled Active Learning Labs (Commonwealth 1)
12C CANCELED How Arduino Does Science (Smithfield/Ft. Pitt)
12D Bioscience Industrial Fellows Program (Birmingham)
Concurrent Sessions • 8:15–9:00

6A Sterlings 1

**Innovate Your Way to Teaching Microsoft Courses Online**

This session will provide details on the NSF ATE iNoVATE-Expansion Project (iNoVATE-X). Attendees will be provided with an overview of new online curriculum and labs for five courses that align to the Microsoft Certified Solutions Expert (MCSE) certification, along with two additional courses: Virtual Internship and Virtual Capstone. The resources are being built using NDG Netlab and will be available for anyone to use as they are developed and tested. If your school is contemplating creating or updating an online MCSE program, this session will help kick-start that process.

**Ernie Friend, Doug Moore, iNoVATE-X, John Vail, Florida State College, Jacksonville, FL**

6B Commonwealth 1

**Recruiting and Retaining Diverse Students in Computing: The NCWIT Approach**

This session introduces participants to NCWIT—a member-based nonprofit organization of almost 600 academic institutions, companies, and nonprofits working to increase women’s meaningful participation in computing. We will explore how NCWIT equips change leaders with research-based resources to build capacity, raise awareness, reach critical populations, and implement systemic change in their organizations. We will focus on the postsecondary space, and one or more AA member representatives (faculty or staff) will discuss how they made use of NCWIT resources and programs to affect change. Free NCWIT resources and information on how to get involved will be provided.

**Beth Quinn, National Center for Women & Information Technology, Boulder, CO; Pamela Silvers, A-B Tech, Asheville, NC**

6C Smithfield/Ft. Pitt

**Building and Leveraging Supportive Industry Partnerships: A Case Study**

In technical education programs, program advisors can be “gold mines” of resources for student recruitment, program improvement, equipment donations, internships, guest speakers, and student employment. In this session, participants will learn strategies for building and maintaining a dynamic and supportive group of partnerships through program advisors. These strategies have been developed and refined from 30 years of industry experience, 15 years of educational experience, and 40 years of program advisor experience. Important strategies shared will include advisory team member selection, advisory meeting location selection, how to create win-win situations with advisors, and pitfalls to avoid and overcome. The session will offer strategies used to strengthen one college’s laser program through advisors and will include a “case study” of multiple advisors working together on the same project.

**Gary Beasley, LASER-TEC, Lillington, NC**

6D Brigade (2nd floor)

**UDL: Just the Tip of the Iceberg**

Closed captions impact learning and understanding for all students, not just the deaf and hearing impaired, yet many ATE projects and centers have no on-site resources to help them meet accessibility requirements. Attendees will learn about services and see demos of tools for adding closed captions to videos, even technical videos with mathematical equations. Based on E-MATE (DUE#1205113) project experiences and lessons learned, this session will give attendees the confidence and tools to dive into the seemingly overwhelming task of adding closed captions themselves.

**Michael Qaissaunee, Kelly Parr, E-MATE, Lincroft, NJ**

Join the HI-TEC Twitter stream to win a $50 Amazon gift card at the Thursday Keynote Luncheon! Follow us on Twitter @Hi_Tec. A monitor showing the Twitter stream will be on display in the Grand Ballroom Foyer. #highimpact2016
A Collaborative Approach to Biomedical Engineering Technology at St. Petersburg College

Funded by a TAACCCT grant, the biomedical engineering technology program is a true collaboration between industry and education. The program at SPC prepares students for careers as medical device technicians at hospitals, manufacturers, and outside service providers. Biomedical engineering technicians (BMET) install, inspect, maintain, repair, calibrate, modify, design biomedical equipment, and support systems to adhere to medical standards and guidelines. We will demonstrate how to integrate industry and multiple disciplines into a degree structure. Attendees will learn how to create an academic pathway for an AS technology degree using our guidelines.

Brian Bell, Giovanna Taylor, St. Petersburg College, St. Petersburg, FL; Lara Sharp, TAACCCT, Clearwater, FL

Developing International Workforce Education Skill Standards for the Technology Workforce

In many technology areas, it is challenging to match the exit skill sets provided to students with the needs of the programs’ industrial “customers.” Session attendees will learn the process followed by nanotechnology educators from across the country who came together, led by NACK, to create a foundational framework series of international nanotechnology workforce education standards via ASTM International. In addition to becoming familiar with the many lessons learned during the standard creation and vetting process, attendees will realize the long-term value of utilizing a standards organization for similar work, the value of creating these standards, how to access these standards, and the applicability of this approach to other technology disciplines.

Robert Ehrmann, NACK, University Park, PA; Deb Newberry, Nano-Link, Rosemount, MN

Scientific Research Experiments Result in Student Internship Opportunities with NASA

This presentation will describe how teams of engineering technology students developed, designed, and built research projects in partnership with NASA, the Jet Propulsion Lab, and the Johnson Space Center, while completing associate degrees. The experiments included summer internships in which selected team members modified and perfected tests at the Jet Propulsion Lab. The session will highlight ways to motivate students to expand their problem-solving skills while working and learning in team environments.

Audrey Webb, CARCAM, Gadsden State Community College, Anniston, AL
Concurrent Sessions • 9:15–10:00

7A  Sterlings 1
A Successful Collaboration to Expand K-12 Computer Science Outreach and Education
This session will describe how conditions for effective collaboration were created and how that collaboration accelerated efforts to expand computer science, IT, and cyber security education in four K-12 school districts. The school districts have modified existing courses to update the computer science and networking content, implemented an Introduction to Cyber Security course that is offered for community college credit, introduced FUSE Studio (from Northwestern University) to six middle schools, and significantly expanded Hour of Code and other coordinated activities. Participants will learn what it took to accomplish this collaborative effort, pitfalls to be avoided, and the results of the collaboration.

Kim Fish, BATEC, Greater Springfield Career ConnectED, Springfield, OH; Rosie Matthias, Greater Springfield Career ConnectED, Springfield, OH

7B  Commonwealth 1
Using Simple Python Scripts in Geospatial Technology
Geospatial technologies cross many disciplines in STEM fields. Typically, geospatial commands are taught in other subjects as needed, focusing mainly on process rather than theory. Through the use of simple Python scripts of less than 10 lines, automation of processes can be done with more time left to teach concepts. This can be done outside of application software for both enterprise and open source software. Attendees will receive sample scripts in which functionality is explained by voice-enhanced slides. How to use and modify these scripts will be demonstrated. Many people are familiar with structured programming languages but not with scripting languages that don’t require compiling. This presentation and demonstration is not just for the geospatial user.

Vince DiNoto, GeoTech, Louisville, KY

7C  Smithfield/Ft. Pitt
Economic Impact of High-Tech Education: Model for Motivating Recruitment, Completion, Job Placement
An adaptable model for estimating economic impact of technical education will be presented, using Excel and LabVIEW. Along with an Excel file, the LabVIEW application will be available as an executable file that can run on a Windows machine with a free download from National Instruments. We estimate a cumulative salary over $2M for our 27 graduates over the past three years. The estimated economic impact is five times higher. The model can be easily adapted to estimate your economic impact. The awareness of economic impact provides a strong motivation to increase national rates of recruitment, technology degree completions, and job placements.

Sam Samanta, FLCC Victor Campus Center, Victor, NY; Mark Walters, National Instruments, Austin, TX

7D  Brigade (2nd floor)
Enhanced Learning of Biology Through 3D Printing
This session will familiarize attendees with free resources that support the creation of projects and curricula involving 3D printing. 3D printing has important educational implications: 3D printing a physical object gives students the ability to understand with touch topics that were previously only accessible through 2D diagrams or animations (for example, by enlarging very small objects). 3D printing also offers a clearer pathway to understanding for students who are not well served by 2D representations. Come learn of the presenters’ successes in using 3D at Wake Tech Community College.

Brian Roach, Model 3D, Raleigh, NC; Russell Wahrman, Wake Technical Community College, Raleigh, NC
Improving Professional Development and Integrating E-Learning Experiences

The Center for Aviation and Automotive Technological Education using Virtual E-Schools (CA2VES) will share faculty-centered professional development activities that improve teaching and instructional experiences by emphasizing active learning and differential education strategies supporting engaged, customized learning in online environments. Examples of recent CA2VES events that will be shared include a statewide two-day faculty workshop focusing on the integration of technology and virtual reality into educational practice while emphasizing integration of soft skills, webinars, and educator and industry networking summits. Participants will interact with virtual reality tools, explore digital learning platforms, and be provided with innovative instructional strategies.

Kris Frady, Rebecca Hartley, Center for Aviation and Automotive Technology Education Using Virtual E-Schools (CA2VES), Clemson, SC

Pick of the Tips: Moving Your Project from Blah to Bodacious

Ready to take your project to the next level? Are you writing an ATE proposal? During this interactive session, attendees will be on the move to learn more about how others do ATE! Five panelists from ATE Projects and Centers that offer resources and support to faculty and project managers will lead roundtable discussions sharing resources, tools, and tips for outreach and dissemination. Participants will get to visit three 10-minute roundtables to learn about newsletters, camps, publications, professional development, Twitter, Facebook, videos, webinars, outreach and social media kits, and lots more! How bodacious can you get?

Marilyn Barger, FLATE, Tampa, FL; Rachael Bower, ATE Central, Madison, WI; Michael Lesiecki, MATEC, Phoenix, AZ; Anthony Manupelli, ATETV, Reading, PA; Elaine Craft, SC ATE, Florence, SC

Sustainable Technologies in Advanced Transportation and Energy (STATE)

Advanced automotive technology programs throughout the nation have a wealth of training materials and curriculum, but no training standards have been developed. The presenters, recipients of a Mentor-Connect Grant through ATE NSF, will discuss issues faced by college automotive programs, provide examples of areas in which those issues are not being addressed, and offer a direction for collaborative creation of advanced technology training standards. Topics will include the concept of “open badging.” Come be included in the development of advanced training standards.

Ken Mays, Central Oregon CC, Bend, OR; John Frala, Rio Hondo Community College, Whittier, CA
Concurrent Sessions • 10:30–11:15

8A  Sterlings 1

Transfer Pathways in Cyber Security Education: Challenging Routes, Promising Practices

Transfer pathways are an “academic gauntlet” that stymies students in all fields, and cyber security is no exception. This presentation will describe the challenges faced by students seeking to use transfer pathways; the varieties of available transfer pathways; promising and potentially exemplary transfer practices, including examples from cyber security education and other fields; and a proposal for improving transfer pathways for cyber security education (and other!) students.

John Sener, National CyberWatch Center, Takoma Park, MD

8B  Commonwealth 1

How Does the Participation in an Online Multiplayer Video Gaming Environment Influence an Adult Learner’s Perception of Collaborative Leadership in an Online and Digital Setting?

The presenter will demonstrate how playing online video games can incorporate collaborative leadership. Although there is research on virtual leadership and collaborative learning, research on online collaborative leadership and how it can be demonstrated via video gameplay is minimal. The presenter’s dissertation focuses on how we can prepare our future IT graduates for online collaborative practices via games such as MineCraft where they only have online communication. Attendees will obtain an understanding of how and why online collaborative video game play can enhance students’ and employees’ collaborative leadership skills.

Adam Beatty, West Virginia Northern Community College, Wheeling, WV

8C  Smithfield/Ft. Pitt

New Photonics Curriculum, Effective Teaching, and Inclusion Methods Formed in an Unlikely Collaboration

The presenters will describe the progress of a photonics program started last year under an NSF ATE grant. The original plan focused on the basics—curriculum, laboratory, and student recruitment. Several influential collaborations later, the rudiments of the plan remain the same, but the “how” has evolved in exciting ways. Combining the OP-TEC “fundamentals of light” subject material, the best curriculum development practices of the U.S. Army’s 128th Aviation Brigade (Ft. Eustis, VA), and the proven “classroom team structure” of a vibrant electronics technology program, the presenters have developed a novel solution that encompasses workplace competency/preparation, diversity, and rapid assimilation by new educators while addressing a critical industry expertise shortage.

Joe Gryniuk, Dave Cunningham, Lake Washington Institute of Technology, Kirkland, WA

8D  Brigade (2nd floor)

Norco College’s ACE Program Prepares Students to Become Supply Chain Technicians in Six Months

Norco College (Norco, California), host of the National Center for Supply Chain Technology Education, has created an accelerated training program designed to prepare students to become supply chain technicians in six months. Session attendees will learn the benefits of the program to students and the many specific challenges the college has had to address to implement it. The session will prepare attendees to develop accelerated programs in the disciplines of their choosing at their institutions and address potential issues in advance of offering their programs. Attendees will also learn how to engage industry to facilitate employment of program graduates.

Colleen Molko, National Center for Supply Chain Technology Education (SCTE), Norco, CA
10:30–11:15 Concurrent Sessions (continued)

8E  Rivers (2nd floor)

Authentic MEMS Education Through Distance Learning and Industry Partnerships

Attendees will learn the process used to develop an Introduction to MEMS survey course for hybrid asynchronous delivery in partnership with a large university and an ATE center. Attendees will explore a student MEMS kit prototype that can be adapted to multiple institutions and classroom settings. Additional resources include virtual field trips and curriculum maps of the course, certificate of completion, and stackable associate degree.

Rick Vaughn, Rio Salado College, Tempe, AZ

8F  Birmingham

A Pathway from High School to a Manufacturing Career

Northwestern Connecticut Community College has developed a pathway to manufacturing careers for high school students who lack a technical background. The pathway is part of the Manufacturing Associate Degree program. High school students can take tuition-free manufacturing courses after school. Students have the opportunity to interview with local manufacturers prior to enrolling in the courses, and manufacturers have offered to provide jobs for students who successfully complete the courses. This session will describe the program development, the methods used to recruit students, ways to help facilitate partnerships, and how to leverage resources.

Sharon Gusky, Tara Jo Holmberg, Northwestern Connecticut Community College, Winsted, CT

8G  Commonwealth 2

Using Arduino and LabView for Teaching MEMS Devices

This presentation will discuss the development of new electronic kit extensions of the SCME MEMS “Modeling a Micro Pressure Sensor” and “Microcantilever Model” kits based on the Arduino Uno microcontrollers and custom LabView software. Arduinos can be used in tandem with shields to provide an inexpensive data acquisition platform that can interface to the MEMS sensors and PCs. NI LabView software can be used to customize the control of the data collection and processing. These new kits can be used in electronic courses while giving students a fundamental understanding of how to use MEMS devices.

Andrew Bell, Ivy Tech Community College, Fort Wayne, IN

8H  Sterlings 2 & 3

Finding Free, High-Quality Curriculum for Technical Workforce Training

Do you know how to take advantage of the world’s largest Open Educational Resources project featuring job-driven workforce development materials? With more than 6,000 resources and more being added daily, SkillsCommons.org is emerging as a treasure trove of free and openly licensed learning materials and program support materials for job-driven workforce development in key sectors such as manufacturing, healthcare, energy, and information technology. You will learn about the most popular curriculum downloads, get tips on “making over” the materials you find, and take away gems that you or others at your institution can use now and in the future.

Samantha K. Brown, Staff Lead for TAACCCT Grants, U.S. Department of Labor, Employment and Training Administration, Washington, DC
Concurrent Sessions • 11:30–12:15

9A  Sterlings 1

Creating an Online Bachelor’s Degree in Software Development with a Major Research University

There is a need for four-year degree programs in software development for students who are completing AS degrees in computer programming at the local community colleges. Most students in those AS programs do not see clear pathways to bachelor’s degrees. This session will show how one community college, funded through a three-year NSF grant, has developed and implemented a successful new degree program in conjunction with a university. Session attendees will receive information on the background and history of the project; industry curriculum DACUM (developing a curriculum) – a listing of the skills needed by computer programmers/software developers, the curriculum for the program, outlines for the courses created for the degree, and marketing and other relevant materials.

Craig Tidwell, Seminole State College, Sanford, FL

9B  Commonwealth 1

Open Badges: The Devil Is in the Details

Digital badges offer a new way to demonstrate competencies. We use badges in our automotive technology and advanced manufacturing programs, but badges are neither age- nor discipline-specific. Badges are certification tools that have value and meaning in any program of learning. This session will explore how badges are built and how they work. Attendees will take away a clearer understanding of how various badging platforms support both the issuer and the recipient.

Bruce Emerson, Central Oregon Community College, Bend, OR

9C  Smithfield/Ft. Pitt

Photonics Entrepreneurship 101: From the Idea to the Start-up in the Academic Curriculum

This session will focus on entrepreneurship in today’s photonics education. Attendees will learn how entrepreneurship is a vital economic engine for photonics as an enabling technology, and about growing business opportunities in emergent technologies. Current photonics students are on a career path that offers excellent job opportunities. However, not many of those students are aware of the option of starting their own photonics ventures. Attendees will leave the session with the content of a business model canvas in entrepreneurship that can be implemented in a photonics or other technology-oriented educational program.

Rubén Gordillo, Andrés Díaz, Jonathan Friedman, PRPI / Universidad Metropolitana, San Juan, PR

9D  Brigade (2nd floor)

Teaching the Internet of Things Using the Raspberry Pi and Arduino Platforms

This session will introduce participants to the emerging Internet of Things (IoT) paradigm. IBM, Cisco, Microsoft, Google, Apple, and other major technology corporations believe that the IoT is the next major technologic evolution and that it will drive their businesses for many years to come. At the two-year college level, there is a lack of formal education about these next-generation Internet applications. This session will demonstrate several cloud-based IoT technology apps. Participants will be shown how they can quickly become involved teaching this technology using low-cost, readily available, wirelessly enabled Raspberry PI and Arduino micro-computer platforms.

Gary Mullett, Springfield Technical Community College, Springfield, MA
VESTA Field Practicums—Where Hi-Tec Meets Lo-Tec

Field-based remote sensing and complex laboratory analyses are essential to the grape and wine industry. VESTA provides foundational and technical online courses integrated with mentored field experiences. These courses and field experiences enable students to apply knowledge gained and develop critical skills through a national network of over 400 commercial vineyards and wineries. Students gain hands-on experiences with the latest hi-tec instruments and procedures and, equally important, develop skills in the lo-tec procedures, such as vine pruning and racking, that are the foundation of successful commercial operations.

Michelle Norgren, Viticulture and Enology Science and Technology Alliance (VESTA), Springfield, MO

Creating Sustainable Pathways Is Creating Successful Students

Structured or Guided Pathways is an emerging model for community colleges that is committed to retention and student success. What are the processes that aid a college in developing the model inclusively, and how does a campus effectively collaborate internally and externally to leverage and create sustainable systems? Having lived and led this process for more than two years at Bristol Community College in Fall River, Massachusetts, the presenters will share lessons learned and empirical outcome and process data, and will provide an opportunity for dialogue and networking to aid others in the adoption of these pathways.

Jennifer Puniello, Meghan Abella-Bowen, Jennifer Dekkers-Mitchell, Bristol Community College, Fall River, MA

Inside the Mind of a Maintenance Tech: How Maintenance Techs See the World and How They Learn

Traditional classes typically do not encourage technical students to do well in their fields. Rote learning and memorization are not ideal for this type of learner. Learn the language of the technician by attending this talk with an experienced technician and educator from the maintenance field. Learn how to incorporate hands-on and project-based learning into the classroom and how to work with math and general education faculty to incorporate real-world problems into their curriculum.

Stuart Zieman, Hopkinsville Community College, Hopkinsville, KY

An NSF ATE Coordination Network Conversation

A new ATE focus area and opportunity is called ATE Coordination Networks. The goal of the ATE Coordination Networks (ATE-CN) is to advance a field or create new directions in technician education. Innovative ideas for implementing novel networking strategies, collaborative technologies, and adaptation and implementation of industry-relevant curricula and best practices across disciplinary and technical areas are encouraged.

V. Celeste Carter, NSF ATE Co-Lead, Washington, DC; Mel Cossette, PI, TEAMM, Lynnwood, WA
Keynote Luncheon

Thursday, 12:30–1:30, Grand Ballroom 2–4

Becky Wai-Ling Packard

Empowering Students to Thrive

As educators, we should aspire to a growth mindset – a belief that learners can grow and accomplish more. Becky Wai-Ling Packard, a researcher and author of Successful STEM Mentoring Initiatives for Underrepresented Students: A Research-Based Guide for Faculty and Administrators, explores the role of mentoring to achieve that mindset and how to create a culture of mentoring at our colleges, schools, and organizations. While formalized mentoring programs can be powerful, we cannot underestimate the power of smaller, informal mentoring interactions such as those that take place in hallways, before or after class, or in workplace or internship environments. Indeed, we can move toward a culture of mentoring if we are more intentional. You will leave with practical actions that you can take to improve the culture of mentoring throughout your spaces.

Keynote Luncheon Giveaways...

Three $50 Amazon gift cards for the best HI-TEC 2016 tweets!  
Free copies of Becky Wai-Ling Packard’s book
10A  Sterlings 1

The LEAN Internship Project: Add Value, Reduce Waste

Eastern Shore Community College worked with local industry to create a dynamic internship program designed to prepare students for entry-level STEM careers. Emphasis was placed on increasing opportunities for women and under-represented students in technical fields. LEAN manufacturing principles were utilized to add value and reduce waste. The presenters will share what was learned as this three-year NSF ATE project (Award Number 1304821) was being implemented. Participants will gain insight into how LEAN manufacturing techniques can be used to create and maintain an efficient internship program through effective partnerships and a team approach.

Teresa Guy, Kimberly Britt, Debbie Daniels, John Floyd, Eastern Shore Community College, Melfa, VA

10B  Commonwealth 1

Inspire Student Ownership in STEM Learning Through Interactive STREAM Notebooks

It is already a big accomplishment for many students to take readable notes during classroom and online STEM instruction and keep their notes organized and usable for assignments and reference. However, the deeper learning begins when students interact with the material presented and take ownership in the learning process. Attendees will be introduced to interactive STREAM (Science, Technology, Reading & Writing, Engineering, Arts, and Math) notebooks and make their own “input” and “output” pages. The project work reflected in this session is supported by NASA WV EPSCoR.

Kari Coffindaffer, Martina Bachlechner, Pierpont Community and Technical College, Fairmont, WV

10C  Smithfield/Ft. Pitt

Developing a Mission Critical Operations Curriculum Using Emerging Technologies to Advance Student Achievement

This presentation will provide insight into the development of a new Mission Critical Operations (MCO) curriculum and new technologies being used to encourage student engagement. Attendees will also be provided with examples of supplemental instructional materials, including a demonstration of an interactive simulation of the daily work of an MCO technician. MCO focuses on 24/7 facilities such as data centers and advanced manufacturing and information processing operations. This curriculum was developed with the assistance of industry contacts working directly in MCO fields.

Noah Spencer, Jennifer Lawson, Wake Technical Community College, Raleigh, NC

10D  Brigade (2nd floor)

Communities of Practice: Secrets of Successful Implementation

This presentation will describe the characteristics of strong, working communities of practice, along with how to get started and keep going and growing. Two examples from the ATE community will be highlighted.

James Hyder, SHINE, Rio Rancho, NM; Marilyn Barger, FLATE, Tampa, FL
1:45–2:30 Concurrent Sessions *(continued)*

**10E  Rivers (2nd floor)**

**Leveraging Hands-on and Self Learning Tools as the Critical Linchpin to Mastering Mechatronics**

During this session the participants will be provided with a roadmap to implementing a Mechatronics Certification and Associate Degree in their advanced manufacturing offerings. The curriculum will be presented along with the hands-on, team-based, and self-learning tools utilized in each module. The instructor’s role as linchpin in the learning environment will be presented in detail. Attendees will be provided with the curriculum outline, instructor skill set, and infrastructure checklist for student engagement. The presenters will discuss challenges and mid-course corrections, student engagement strategies, industry partnerships, measurement and evaluation tools, and lessons learned.

*Patricia Kelly Lee*, *Patricia Thompson*, Community College of Allegheny County, Oakdale, PA

**10F  Sterlings 2 & 3**

**Is Teaching the Internet of Things In Your Future?**

So, what will be the “hottest” technology in the next several years? 3D Printing? Drones? Wearable technology? All of these are cool, but several futurists and prognosticators believe that it will be the Internet of Things ... better known as IoT. This session will discuss how the Internet of Things can be integrated into your networking curriculum and provide examples of hands-on exercises using a combination of cost-effective technologies and virtualization that can be incorporated into your classroom. Attendees will learn about labs that can be taught in class and easily added to existing programs.

*Bill Saichek*, Orange Coast College, Costa Mesa, CA; *Brian Nelson*, Lansing Community College, Lansing, MI

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**Refreshment Break**

2:30–2:45

**Grand Ballroom Foyer**
Concurrent Sessions • 2:45–3:30

**11A  Sterlings 1**

**Capstone Project for Fundamental Networking Courses**

Students learning networking fundamentals should be able to apply newly learned networking concepts (e.g., addressing, DHCP, troubleshooting) without reconfiguring a production network. This session will demonstrate a networking laboratory activity where participants build an independent network using a virtual machine with bridged networking. Participants will be provided with an optical disc containing the software used in the activity so that they can duplicate it in their environments.

_Vicky Smith, Connie Justice_, Purdue School of Engineering and Technology; _Nicholas Novotny_, IT Academy @ IUPUI, Indianapolis, IN

**11B  Commonwealth 1**

**Classroom Laboratory at the Edge of Space: Introducing the Mini-Cube Program**

This presentation will introduce aerospace technology instructors and STEM educators how to set up a student-focused “space program” utilizing the Mini-Cube Program. With this STEM project-based learning activity, students can have the unique, affordable, and challenging opportunity to send experiments and/or technology projects via high-altitude balloon to an altitude of 100,000 feet (20 miles), commonly known as the “edge of space.”

_Gregory Cecil_, SpaceTEC, Cape Canaveral, FL

**11C  Smithfield/Ft. Pitt**

**Creating Future Scientists using Undergraduate and High School Research**

One of the best ways to get young students excited about science is to get science into their hands. The presenter will talk about projects high school students can do with a little guidance from a scientist. The presenter will also discuss how undergraduate research using biotechnology program students is moving in-house projects forward while providing great research lab experience, making the students more valuable to future employers. Suggested criteria for student projects will be discussed, along with the practices that have been the most successful.

_Eilene Lyons_, Bio-Link, St. Charles, MO

**11D  Sterlings 2 & 3**

**National Resource Center for Materials Technology Education**

MatEdU’s collection of materials science resources forms a virtual open-source library. Take a guided tour through resources such as classroom modules, core competencies, and instructional materials, all related to materials science and manufacturing. Discover how you can incorporate these resources easily into your curriculum development and classroom activities. You’ll take away a rubric to help you decide what external links to incorporate into your website.

_Robin Ballard, Mel Cossette_, National Resource Center for Materials Technology Education (MatEdU), Lynnwood, WA

**11E  Commonwealth 2**

**Effective Student Recruitment Strategies: Technical College and Energy Industry Partnership Model**

Many institutions have experienced challenges in filling their programs. Northeast Wisconsin Technical College (NWTC) is bursting at the seams with students in energy programs. Programs that were struggling two years ago have wait lists. Attendees of this session will learn how NWTC filled its pipeline by offering Utility Preview Days, Wisconsin Energy Workforce Development Careers in Energy Week, and other innovative events. The presenter will also share how the program partners with industry to build relationships to ensure graduates are hired. Attendees will leave this session with resources for customizing to their own events for any technical program.

_Amy Knox_, Northeast Wisconsin Technical College, Green Bay, WI
Concurrent Sessions • 3:45–4:30

12A  Sterlings 1
Getting Back to Basics: An Introduction to the Windows Command Line Interface
This session covers the origin, current status, and features of the Windows command line interface (CLI), along with its functions and how to optimize it for ease of use. Also covered are the basics of command syntax, pertinent keyboard shortcuts, and how to write a simple batch program. Attendees will gain skill and confidence and even experience enjoyment in working with the CLI. The session features a presentation interspersed with activities designed to demonstrate relevant concepts, as well as provide a hands-on learning experience. Activity, assessment, and related curriculum materials will be available online and in limited hard-copy.
   David Pope, Ozarks Technical Community College, Springfield, MO

12B  Commonwealth 1
Technology Enabled Active Learning Labs: TEAL Is More Than a Color; It’s Collaboration.
West Virginia Northern Community College (WVNCC) has created a Technology Enabled Active Learning lab that provides students the opportunity to work in small groups (as in the workplace) and to seek their own learning with guidance. Learning to manage roles that develop organically in collaboration can be invaluable in fostering emotional intelligence, which is often valued by employers over skill and experience. This interactive session will take learners through our lessons learned and provide an opportunity for discourse about collaboration and how it can add value to learning environments.
   Lucy Kefauver, West Virginia Northern Community College, Wheeling, WV

12C  Smithfield/Ft. Pitt
How the Arduino Does Science and More! It’s Not Just for Teaching Programming Anymore
Want to build a spectrometer? Measure the speed of light? Build a micro balance? With Arduino, you can build these things and more in your classroom or lab.
   Dorian McIntire, Tri-County Technical College, Pendleton, SC

12D  Birmingham
Bioscience Industrial Fellows Program
The National Center for the Biotechnology Workforce (NCBW) of Forsyth Tech recently hosted biotechnology “bootcamps” at community colleges in Winston-Salem, NC. The purpose of the month-long program was to have participants visit bioscience sites and demystify the bioscience industry by developing and delivering modules for teacher professional development. This session will present highlights of the experience.
   Russ Read, National Center for the Biotechnology Workforce, Winston-Salem, NC; Allison Nestor, Forsyth Tech, Winston-Salem, NC; Denise Schweizer, Rowan Cabarrus Community College, Salisbury, NC

Canceled
Exhibitors

Exhibits are located in two rooms: Grand Ballroom 1 and Kings Garden.

**HOURS:** Wed 9:45–6:00 (reception 4:30–6:00) and Thur 7:30–noon.

**Booth 205**
**360° Manufacturing and Applied Engineering ATE Regional Center of Excellence**
1500 Birchmont Drive NE, #34
Bemidji, MN 56601
360mn.org
360° is a consortium of 15 colleges led by Bemidji State University that serves advanced manufacturing by offering flexible educational opportunities and promoting manufacturing careers.

**Booth 615**
**AC2 Bio-Link Regional Center/ACC Bioscience Incubator**
3401 Webberville Road
Austin, TX 78702
www.ac2.bio-link.org
Both organizations are located at Austin Community College in Texas. Combining economic development with education, they prepare technicians, educate teachers, and help the bioscience industry.

**Booth 702**
**Amatrol, Inc.**
2400 Centennial Boulevard
Jeffersonville, IN 47130
www.amatrol.com
Amatrol, the world’s leader in skills-based, interactive technical learning, strives to transform the global workforce one life at a time.

**Booth 404**
**AMTEC: Automotive Manufacturing Technical Education Collaborative**
300 North Main Street
Versailles, KY 40383
www.autoworkforce.org
AMTEC is a collaboration of community and technical colleges and industry partners who work together to prepare highly skilled technicians for work in automobile manufacturing and technology. We provide industry-endorsed hybrid modularized curriculum, career pathways for lifelong learners, partnerships for a globally competitive workforce, and nationally recognized assessment and certification.

**Booth 717**
**ARM**
150 Rose Orchard Way
San Jose, CA 95134
www.arm.com
The ARM University Program enables educational use of ARM technology. University courses and labs, student projects, and academic research in embedded systems, microprocessors/controllers, mechatronics, SoC design, computer architecture, and other areas all benefit from using ARM.

**Booth 612**
**ATE Central**
1210 W. Dayton Street
Madison, WI 53706
www.atecentral.net
ATE Central is a freely-available online portal and collection of materials and services that highlight the work of the Advanced Technological Education (ATE) projects and centers.

**Booth 611**
**BATEC: Broadening Advanced Technological Education Connections (BATEC)**
100 Morrissey Boulevard
Boston, MA 02125
www.batec.org
BATEC works across urban areas to define, extend and strengthen the academic pathways and programs in computer science, information technology, digital networking, web design, and data analysis.

**Booth 613**
**Bio-Link**
1855 Folsom Street
San Francisco, CA 94103
www.bio-link.org
The Next Generation National ATE Center for Biotechnology and Life Sciences, now in its 18th year, increases the number and diversity of well educated technicians in the workforce. The Center meets the ever-growing needs of a continually evolving and diversifying industry for highly educated technicians.

**Booth 401**
**Biosciences Industry Fellows Program (c3bc)**
2100 Silas Creek Parkway
Winston-Salem, NC 27103
www.biotechworkforce.org
The NCBW will demonstrate our leading programs: The DOL Consortium for Bioscience Credentials (c3bc) and the Bioscience Industry Fellows Program (BIFP).

**Booth 720**
**Center for Advanced Automotive Technology (CAAT)**
14500 E. 12 Mile Road
Warren, MI 48088
www.autocaat.org
The Center for Advanced Automotive Technology meets technician workforce needs in the new automotive technology areas of electrification, lightweighting, and autonomous vehicles.

**Booth 722**
**CREATE: College of the Canyons**
26455 Rockwell Canyon Road
Santa Clarita, CA 91355
www.create-california.org
The goal of this ATE Center is to address the demonstrated high demand for renewable energy technicians and disseminate cross-educational collaborations regionally, nationally, and internationally.

**Booth 203**
**CA2VES**
110 Freeman Hall
Clemson, SC 29634
www.clemson.edu/centers-institutes/cucwd/centers/ca2ves
The Center for Aviation and Automotive Technology Education using Virtual E-Schools (CA2VES) develops and researches virtual reality and digital learning tools to advance technological education to support workforce preparedness and economic development.

**Booth 620**
**CARCAM: Consortium for Alabama Regional Center for Automotive Manufacturing**
P.O. Box 227
Gadsden, AL 35902-0227
www.carcam.org
Consortium for Alabama Regional Center for Automotive Manufacturing (CARCAM) responds to rapid advanced manufacturing sector growth by establishing and implementing innovative methods to develop a highly-skilled, diverse technical workforce and provide state-of-the art professional development.
Booth 706
**CTC: National Convergence Technology Center**
Collin College
9700 Wade Boulevard #J130
Frisco, TX 75035
www.connectedtech.org
The National Convergence Technology Center mentors and supports colleges in creating curriculum, degrees, and certificates; recruiting underserved students; and developing faculty under business leadership.

Booth 402
**DeafTEC: Technological Education Center for Deaf and Hard-of-Hearing Students**
52 Lomb Memorial Drive
Rochester, NY 14623
www.deaftec.org
A National Center of Excellence that serves as a resource for teachers and employers with the goal of successfully integrating more deaf and hard-of-hearing individuals into the STEM technician workforce.

Booth 704
**EMC Corporation**
55 Constitution Boulevard
Franklin, MA 02038
www.education.emc.com
EMC is a global leader in enabling businesses to transform their IT operations and deliver IT as a service.

Booth 619
**ETA International**
5 Depot Street
Greencastle, IN 46135
www.eta-i.org
ETA® International represents electronics professionals with over 80 industry-recognized certifications. ETA certifications, developed by industry experts, align with international standards and confirm both technical knowledge/hands-on skills.

Booth 716
**EvaluATE**
1903 W. Michigan Avenue
Kalamazoo, MI 49008
www.evalu-ate.org
EvaluATE is the evaluation resource center for NSF’s Advanced Technological Education program. We provide webinars, resources, newsletters, and other opportunities to learn about evaluation.

Booth 305
**Fabricator 3D Printers by K&L Services Group**
215 N. 8th Street
Allentown, PA 18102
www.fabricator.com
Allentown, PA based manufacturer of 3D printers for use in education and industry.

Booth 206
**Festo Didactic**
607 Industrial Way West
Eatontown, NJ 07724
www.labvolt.com
Festo Didactic is the world-leading equipment and solution provider for industrial education.

Booth 703
**FLATE Mechatronics Community Exchange**
10414 E. Columbus Drive
Tampa, FL 33619
www.fl-ate.org
FLATE’s Mechatronics Community Exchange (MCE) is a national community of mechatronics educators. We share programmatic, delivery and recruitment solutions and strategies to grow academic programs.

Booth 705
**FLATE: Florida Advanced Technological Education Center**
10414 E. Columbus Drive
Tampa, FL 33619
www.fl-ate.org
FLATE is the National Science Foundation center of excellence committed to ensuring Florida has a well prepared technician workforce for manufacturing and related industries.

Booth 712
**LASER-TEC: Southeast Regional Center for Laser and Fiber Optics Education**
3209 Virginia Avenue
Fort Pierce, FL 34981
www.laser-tec.org
Developing a sustainable pipeline of qualified laser and fiber optic technicians to meet industry needs in the southeastern United States.

Booth 715
**Manufacturing Skill Standards Council (MSSC)**
901 N. Washington Street
Alexandria, VA 22314
www.msscsusa.org
The Manufacturing Skill Standards Council (MSSC), a 501(c)3 non-profit, is an industry-led, training, assessment and certification system focused on the core skills and knowledge needed by the nation’s front-line production and material handling workers.

Booth 617
**MATEC NetWorks**
4110 E. Wood Street, Suite 1
Phoenix, AZ 85040
www.matecnetworks.org
MATEC NetWorks is a NSF-ATE Resource Center that provides digital learning resources including webinars in the areas of semiconductors, automated manufacturing, electronics and related fields.

Booth 710
**MPEC: Midwest Photonics Education Center**
525 Grandview Avenue
Ottumwa, IA 52501
www.midwestphotons.org
MPEC, an NSF-ATE Regional Center, is working with educational and industry partners to educate students in laser and optics technology with an emphasis in laser materials processing.

Booth 604
**MTAB USA LLC**
2018 156th Avenue NE
Bellevue, WA 98007
www.mtabusa.com
Training solutions in the areas of CNC certification training, Mechatronics, Robotics and Manufacturing Automation with hardware, software, curriculum and teacher training.

Booth 606
**Nano-Link: Center for Nanotechnology Education**
1300 145th Street E.
Rosemount, MN 55068
www.nano-link.org
Nano-Link is dedicated to helping two-year college programs develop technicians, establish industry partnerships, provide content to educators, and facilitate professional development opportunities for educators.

Booth 721
**National CyberWatch Center**
301 Largo Road, CAT 129C
Largo, MD 20774
www.nationalcyberwatch.org
The role of the National CyberWatch Center is to lead and support collaborative efforts to advance cyber security education and strengthen the national cyber security workforce.
Booth 301
National Geospatial Technology Center of Excellence
1000 Community College Drive
Louisville, KY 40272
www.geotechcenter.org
The Geo Tech Center vision is to increase the number of successful learners and well-qualified workers possessing industry-defined geospatial information, science and technology skills and competencies. Our mission is to provide educators with curricula and professional development opportunities based on applied research of nationally normed skills, competencies, and trends in all domains of the geospatial workforce.

Booth 616 & 618
National Instruments
11500 North Mopac Expressway
Austin, TX 78759
www.ni.com
NI provides comprehensive academic solutions that deliver engaging, real-world learning experiences to prepare students to “do engineering” in the classroom and in professional practice. Visit us in booth #’s 616 & 618 to explore the latest teaching and research tools for circuits, measurements, controls, mechatronics, wireless communications, and student design.

Booth 503
NBC2: Northeast Biomanufacturing Center and Collaborative
340 Dekalb Pike
Blue Bell, PA 19422
www.bionanomfg.org
The NBC2 will showcase cutting-edge curricular materials for biomanufacturing education and highlight the online resources for educators and students available on the NBC2 website.

Booth 403
NEATEC
257 Fuller Road
Albany, NY 12203
www.neatec.org
NEATEC is leading the way in developing model programs for serving the workforce development needs of nanotechnology and nanoelectronics businesses in the Northeast.

Booth 306
Nida Corporation
300 S. John Rodes Boulevard
Melbourne, FL 32904
www.nida.com
Nida Corporation provides performance-based, computer-assisted technician training solutions for industry, military and academic training programs around the world.

Booth 708
OP-TEC: National Center for Optics and Photonics Education
316 Kelly Drive
Waco, TX 76710
www.op-tec.org
OP-TEC, an NSF ATE National Center, is working with secondary, postsecondary and industry partners to increase and sustain our nation’s capacity to produce laser, optics, and photonics technicians.

Booth 608
RCNET: Regional Center for Nuclear Education & Training
3209 Virginia Avenue
Fort Pierce, FL 34981
www.gonuke.org
RCNET was established to ensure the demand for skilled nuclear technicians is met in a standardized and systematic way.

Booth 718
Rethink Robotics
27 Wormwood Street
Boston, MA 02110
www.rethinkrobotics.com
Rethink Robotics is transforming manufacturing and engineering education with our smart, collaborative Baxter and Sawyer robots, powered by our Interact software and open SDK.

Booth 610
RCNGM: Regional Center for Next Generation Manufacturing
271 Scott Swamp Road
Farmington, CT 6032
www.nextgenmfg.org
The Regional Center for Next Generation Manufacturing addresses the need for highly-skilled workers in advanced manufacturing by partnering both educators and students with industry.

Booth 711
Rockwell Automation
1 Allen-Bradley Drive
Mayfield Heights, OH 4124
www.rockwellautomation.com
Rockwell Automation Training Services believes in working with education by helping shape curriculum and creating innovative educational products to produce results. They offer Industrial Automation curriculum packages with real-world and application-relevant workstations to help schools achieve current industry standards. These resources help schools stay ahead of the technology curve.

Booth 707
SC ATE Center: South Carolina ATE Center of Excellence
2715 West Lucas Street
Florence, SC 29501
www.scate.org
SC ATE National Center: Links educators to low-cost/no-cost professional development, a compendium of research on technician education, and a “build-your-own” recruitment video tool for technician and STEM education.

Booth 709
SC ATE Mentor-Connect
2715 W Lucas Street
Florence, SC 29501
www.mentor-connect.org
Mentor-Connect: A Leadership Development and Outreach Initiative for ATE is to broaden the impact of the NSF ATE program through mentoring and knowledge transfer for technician education advancement among the nation’s two-year colleges.

Booth 714
SCME: Southwest Center for Microsystems Education
800 Braddock Drive SE #235
Albuquerque, NM 87106
www.scme-nm.org
The SCME offers professional development and educational materials to excite and engage secondary and postsecondary students in the field of Microsystems (MEMS) technology.

Booth 304
SHINE: Seattle’s Hub for Industry-driven Nanotechnology Education
9600 College Way N.
Seattle, WA 98103
www.seattlenano.org
SHINE is an NSF Regional Center that promotes awareness of nanoscience, trains technicians to meet industry needs, and connects nanotechnology stakeholders in the Pacific Northwest.

Booth 605
Simtronics Corporation
PO Box 38
Little Silver, NJ 07739
www.simtronics.com
Simtronics Corporation provides Operator Training Simulators (OTS) for the Process Industries and the Educational Institutions that train Operators and Technicians.
Booth 621
Skilled Workers Get Jobs 2.0: Appalachian Impact
340 Victoria Road
Asheville, NC 28801
www.abtech.edu
Strategies will be shared for recruiting and retaining women in Technology and Engineering programs.

Booth 303
SMART Center: Southeast Maritime and Transportation Center
1800 College Crescent
Virginia Beach, VA 23453
www.maritime-technology.org
The SMART Center serves as a regional Advanced Technological Education (ATE) Center, preparing a sustainable, globally-equipped maritime and transportation workforce for the 21st century.

Booth 204
SpaceTECC
7099 N. Atlantic Avenue, Suite 300
Cape Canaveral, FL 32920
www.spacetec.org
SpaceTEC®, the National Science Foundation’s National Resource Center, promotes and educates candidates for technical employment. Its certification programs offer performance-based examinations that result in industry-driven nationally recognized credentials.

Booth 622
Stratasys
5 Fortune Drive
Billerica, MA 01821
www.stratasys.com
Stratasys is shaping our world. Our trusted 3D printing solutions widen the path of innovation empowering leading manufacturers and ground-breaking designers, makers, thinkers and doers.

Booth 609
Stylus Publishing
22883 Quicksilver Drive
Sterling, VA 20166
www.styluspub.com
Stylus Publishing—a leading publisher of books on higher education—markets and distributes throughout the Americas the lists of a number of independent publishers and leading NGOs and research institutions.

Booth 607
Tooling U-SME
3615 Superior Avenue, Bldg 44, 6th floor
Cleveland, OH 44144
www.toolingu.com
Tooling U-SME, a division of SME, delivers competency-based learning and development solutions to manufacturing, including Fortune 500® manufacturing companies and educational institutions.

Booth 405
Transcender
332 Front Street
Lacrosse, WI 54601
www.transcender.com
Transcender is dedicated to helping IT professionals prepare for tough certification exams and strengthen their technical job skills. We accomplish this by creating and developing the most in-depth and realistic practice exam items, answer explanations, and references in the industry. Prepare with the top name in exam IT prep.

Booth 505
VESTA National Center
901 S. National
Springfield, MO 65897
www.vesta-usa.org
VESTA provides students access to nationally recognized expert instructors through online courses and participation in local field practicum utilizing its ground-breaking distance education model.

Booth 302
Weld-Ed: The National Center for Welding Education and Training
1005 North Abbe Road
Elyria, OH 44035
www.weld-ed.org
Weld-Ed strives to improve the quality of education and training services to address the hiring and professional development needs of the welding industry.

Booth 719
Whatcom Community College
237 West Kellogg Road
Bellingham, WA 98226
www.whatcom.ctc.edu
CyberWatch West and CS are NSF-funded projects that are strengthening cyber security education and the workforce through mentorship, industry collaboration, faculty, student and curriculum development.
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