Save the Date!

July 25–28, 2016

HI-TEC Pittsburgh
Wyndham Grand Hotel

www.highimpact-tec.org

High Impact Technology Exchange Conference

Educating America’s Technical Workforce

CONFEREE PROGRAM

2015

July 27–30
Portland, Oregon

All sessions at the Portland Marriott Downtown Waterfront
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/STR 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 II CC supplements to support partnerships. www.nsf.gov/eng/rip/sbir/Supplement
It is with great pleasure that I welcome you to Portland, Oregon, and the 2015 HI-TEC conference! HI-TEC has become the go-to place for technician educators. The conference provides many opportunities to network—breaks, meals, the exhibit hall—and to see advances in technologies that influence the training of our future workforce.

Along with over 90 concurrent sessions, 16 workshops, and three site visits, we are excited to offer a free DOL TAACCCT technical assistance event.

I hope you have the opportunity to experience the city of Portland and its amenities. This year’s site visits include a visit to the Bonneville Lock and Dam, Vestas American Wind Technology, Inc., and a Cutting Edge Green Walking Tour that showcases the green building technology utilized by the city.

Thank you for attending HI-TEC and helping to grow and improve it each year. Please mark your calendar for HI-TEC 2016 in Pittsburgh, Pennsylvania, at the beautiful Wyndham Grand Hotel, July 25–28.

Kevin Cooper, 2015 Chair, RCNET

2015 Committees and Key Personnel

Executive Committee
Chair: Kevin Cooper, RCNET
Mentors: Marilyn Barger, FLATE; Michael Lesiecki, MATEC NetWorks
Ann Beheler, CTC; Jamey Capers, RCNET; Kris Frady, CA2VES; Beverly Hilderbrand, CARCAM; Peter Kazarinoff, SHINE; Donna Lange, DeafTEC; Deb Newberry, Nano-Link; John Sands, CSSIA; Gordon Snyder, OP-TEC; Karen White, 360°; Sheila Wilson, CORD

Awards Committee
Chair: Beverly Hilderbrand, CARCAM
Ramona Anand, WeldEd; Elaine Johnson, BioLink; Barbara Murray, SMART

Marketing Committee
Chair: Kris Frady, CA2VES
Jessica Gehrke, 360°; Mel Cossette, MatEdU; Christine Dossey, OP-TEC; Marilyn Barger, FLATE; Ramona Anand, WeldEd; Natalia Chekhovskaya, LASER-TEC

Proceedings Committee
Chair: Donna Lange, DeafTEC
Marilyn Barger, FLATE; Ann Beheler, CTC; Rachael Bower, ATE Central; Elaine Craft, SC ATE; Kristin Frady, CA2VES; Peter Kazarinoff, SHINE; Anna Kolliopoulos, SC ATE; Myra Pelz, DeafTEC; Karen Wosczyna-Birch, RCNGM

Program Committee
Sessions and Poster Sessions Chair: Peter Kazarinoff, SHINE
Workshops Chair: Karen White, 360°
Mentors: Ann Beheler, CTC; Deb Newberry, Nano-Link
Marilyn Barger, FLATE; Deborah Boisvert, BATEC; Charlotte Forrest, SC ATE; Dan Hull, OP-TEC; Donna Lange, DeafTEC; Chrys Panayiotou, LASER-TEC; Corrine Sand, CyberWatch West; John Sands, CSSIA; Pierre Thiry, MPICT; Karen Wosczyna-Birch, RCNGM

Sponsorship Committee
Chair: Donna Lange, DeafTEC
Mentor: Michael Lesiecki, MATEC NetWorks

Technology Committee
Chair: Gordon Snyder, OP-TEC
Ann Beheler, CTC

Conference Manager
Sheila Wilson, CORD

Registrar / Exhibits
Linda Locke, CORD

Website Coordinator
Kathy Kral, CORD

Editor
Mark Whitney, CORD
As we complete the seventh year of the HI-TEC conference, I am truly impressed and humbled by the enthusiasm and drive that my colleagues have had in putting together this year’s conference. Each year, the committees that put the conference pieces together find ways to drive it forward.

This is indicative of the basis of the NSF ATE program—driving forward education and training through technology. A special thanks goes to the executive steering committee for their support and guidance. I would also like to thank the committees for their time and effort in making this year’s HI-TEC great. Peter Kazarinoff and Ann Beheler did a tremendous job of coordinating the program efforts. We are able to offer three outstanding site visits that speak directly to conference attendees through the efforts of Karen White. Beverly Hilderbrand managed the awards committee and the task of determining awards for each sector. Gordon Snyder and the technology committee 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 that will oversee the e-proceedings publication that will be disseminated after the conference. Kris Frady organized the marketing committee. Marilyn Barger, Deb Newberry, and Dan Hull were insightful in the conference from their years of experience. Michael Lesiecki was instrumental in coordinating with our host college – Portland Community College – and performed many tasks behind the scenes.

A special gratitude is owed to Sheila Wilson and her team from the Center for Occupational Research and Development (CORD). They have done an outstanding job in coordinating the details that make the conference successful.

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

Thank you to the exhibitors for bringing awareness to all of the products and services that ultimately help our students succeed.

Lastly, I would like to thank each attendee for supporting HI-TEC and using the resources that they derive from this opportunity to better educate and strengthen the workforce pipeline for tomorrow’s job market.

Kevin Cooper, 2015 Chair, RCNET
In the Back of the Exhibit Hall . . .

Michele Weslander Quaid will be available in the hall to greet and visit with attendees after the Opening Session.

Photo Booth
Take your photo in the Photo Booth! The booth comes with a social media sharing station. Email, text, or Facebook your photo strips.

International Year of Light Gallery
View a collection of photographs reflecting amazing interactions of light and matter in the image gallery in the back of the exhibit hall. Poster prints of these optical phenomena will be given away during the exhibit hall door prize drawings in celebration of the International Year of Light and Light-based Technologies (IYL2015).
Michele Weslander Quaid

Wednesday, July 29, 8:30–9:45 a.m.

Michele was formerly Google’s Chief Technology Officer (Public Sector) and Chief Innovation Evangelist. Google’s renowned innovative culture is built on core philosophies that include “ideas come from everywhere.” Learn from Michele’s extensive experience in leading change and innovation, as she shares her insights and recommendations for inspiring a shared vision and engaging your students to believe in themselves, hone their talents, pursue their passion, and discover their purpose.

Param Jaggi

Thursday, July 30, 12:30–1:30 p.m.

Param is the 20-year-old founder and CEO of Ecoviate, a research and development company focusing on redefining consumable sustainability. Since the age of 13, he has innovated bio-fuel preparation, designed highly effective bioreactors, created a device that mitigates motor vehicle emissions (currently patented), and many more. Param was named to the 2012 and 2013 Forbes “30 Under 30: Energy” list for his work in green-technologies. Aside from dropping out of Vanderbilt University at the age of 19, studying Mechanical Engineering and Economics, Param also serves as a board member to the USASEF (USA Science & Engineering Festival) and Spark Clean Energy to facilitate STEM education around the country.
SCHEDULE AT A GLANCE

Sunday, July 26 4:00–7:00 P.M. Registration (Oregon Ballroom Foyer)

All events held in the Portland Marriott Conference Center.

MAIN CONFERENCE

WED • July 29

7:00 A.M.–5:00 P.M. Registration (Oregon Ballroom Foyer)

7:45–8:30 A.M. Continental Breakfast (Oregon Ballroom)

8:30–9:45 A.M. Opening and Keynote (Oregon Ballroom)

9:45–10:15 A.M. Refreshment Break / View Exhibits Posters (Lower Level 2)

9:45 A.M.–6:00 P.M. Exhibit Hall Open (Lower Level 2)

10:15–11:00 A.M. Breakout Sessions #1

11:15 A.M.–12:15 P.M. Breakout Sessions #2

11:15 A.M.–12:15 P.M. Breakout Sessions #3

11:00 A.M.–12:15 P.M. Breakout Sessions #4

12:30–1:30 P.M. Keynote Luncheon (Oregon Ballroom)

1:45–2:30 P.M. Keynote Luncheon (Oregon Ballroom)

TAACCCT Convening (Oregon, Salon I)

3:45–4:30 P.M. Breakout Sessions #5

3:45–4:30 P.M. Breakout Sessions #6

4:30–6:00 P.M. Exhibit Hall Reception / Poster Sessions (Lower Level 2)

FRIDAY • July 31

8:30 A.M.–12:30 P.M. TAACCCT Convening (Oregon, Salon I)

Must be present to win prize drawings.
Preconference MONDAY

Must be registered to attend preconference events.

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

8:00–8:30 A.M.
Continental Breakfast (for morning workshop attendees; Oregon Ballroom, Salon E)

8:30 A.M.–Noon Refreshment Break • 10:00–10:30 Oregon Ballroom Foyer
PRECONFERENCE WORKSHOPS
Raspberry Pi—From the Box to a Movie in a Couple of Hours (Oregon Ballroom, Salon A)
Using Web-Based Media Production to Promote Programs (Oregon Ballroom, Salon G)
Game Jam—Teaching STEAM Across Disciplines (Oregon Ballroom, Salon C)
Sustaining Grant-Funded Activities and Deliverables (Mt. Hood)
Fluid Dynamics Labs for Middle School to Graduate School (Oregon Ballroom, Salon D)

Noon–1:00 P.M.
Preconference Lunch (for afternoon workshop attendees; Oregon Ballroom, Salon E)

1:00–4:30 P.M. Refreshment Break • 2:30–3:00 Oregon Ballroom Foyer
PRECONFERENCE WORKSHOPS
VEX Robotics: A Primer (Oregon Ballroom, Salon A)
Violent Python (Oregon Ballroom, Salon G)
Bring Content to Life: Interactive E-books, Lessons, and Apps (Eugene)
Creating Micro Devices Exploiting Crystal Structure (Medford)
Achieving Broader Impact and Scale for Your Projects (Mt. Hood)
Broadening Access to Mathematics Education (Oregon Ballroom, Salon H)

2:00–5:00 P.M.
RCNET Meeting (by invitation; Columbia)

6:30–8:30 P.M.
OP-TEC Meeting (by invitation; Oregon Ballroom, Salon CD)
Preconference Workshops • 8:30 A.M.–Noon

Oregon Ballroom, Salon A

Raspberry Pi—From the Box to a Movie in a Couple of Hours

Attendees will unbox an exciting credit-card-sized Linux-based computer. After getting the operating system loaded and working, we will hook up a small camera and take pictures. Then we will write a simple command that will take pictures that can be strung together to make a time-lapse movie. Finally we will learn how to connect the Raspberry Pi to an IR sensor to make a motion sensitive camera. Throughout the workshop we will discuss how educators can use this powerful computer.

Jonathan Ashdown, NEATEC, Greenwich, NY; Abraham Michelen, NEATEC, Troy, NY; Michael Davis, BATEC, Chicago, IL

Oregon Ballroom, Salon G

Using Web-Based Media Production to Promote Your Programs

Today's students communicate and learn using social network and web-based tools. This session will provide a hands-on experience in using these tools to develop web-based multimedia productions that can be used to promote programs and events and recruit participants. The session will compare and contrast development environments. Participants will be encouraged to create their own promotional materials, media clips, electronic publications, and instructional materials.

John Sands, Lynn Dohm, Dave Termunde, CSSIA, Palos Hills, CA

Oregon Ballroom, Salon D

Affordable and Effective Fluid Dynamics Labs for Middle School to Graduate School

Participants will be introduced to Bernoulli’s law and will demonstrate the underlying principles through hands-on experiments. We will explore “head” (weight of the fluid), velocity (momentum energy), and pressure. Following an initial discussion, attendees will put their own hands into water, using inexpensive ($15) pumps, a few batteries, buckets, and tubing to learn how to teach this often challenging but critical subject matter. This is a hands-on interactive workshop that provides lesson plans, parts lists, and the “know how” to bring fluid dynamics to your school.

Evan Smith, Lawrence Beaty, Mike Fort, Idaho State University ESTEC, Pocatello, ID

Mt. Hood

Planning to Succeed: Strategies and Tools to Help Sustain Grant-Funded Activities and Deliverables

Participants will explore strategies for sustaining their project and center deliverables. This workshop will incorporate best practices drawn from case studies and research that will help participants clarify their missions, maximize impacts, and support the creation of usable sustainability plans. Participants will explore ATE Central’s portfolio of sustainability and data management services—including sustainability webinars, ATE Central’s Archiving Service (which responds to the new NSF ATE archiving requirement), and the ATE Activity Reports.

Rachael Bower, ATE Central, Madison, WI; Nancy Maron, Ithaka S&R, New York, NY

Oregon Ballroom, Salon C

Game Jam—Teaching STEAM Across Disciplines

Participants will experience being part of a game jam by ideating, pitching, designing, and presenting their games. Using imagination, teamwork, paper, pens, and laptops, participants will work together to build prototypes of games based on a common theme. Since this is the work of a 54-hour event compressed into a half-day workshop, participants will gain insights into how to organize the event but should not expect to leave with completed games. Check out this 10-minute documentary about the CSUEB Game Jam: https://youtu.be/XqQqb4K8Ffi

Ian Pollock, California State University, East Bay, Hayward, CA
Preconference Workshops • 1:00–4:30 P.M.

Oregon Ballroom, Salon A

VEX Robotics: A Primer

VEX Robotics is one of the largest and fastest growing robotics competitions in the world. The instructors will introduce VEX hardware and robot programming strategies. The workshop will conclude with a discussion of how 360° Manufacturing and Applied Engineering ATE Center of Excellence implemented the VEX Robotics competition across Minnesota. Bring a laptop.

Aaron Barker, Andrew Dahlen, 360 Degree Center of Excellence, St. Cloud, MN

Oregon Ballroom, Salon G

Violent Python

Hacking with Python is easy. Participants will create tools and hack into test systems, including port scanning, login brute-forcing, port knocking, and cracking password hashes. With Python, it’s easy to create a keylogger that defeats commercial antivirus products. Bring a laptop with VMware Player or VMware Fusion. Thumb drives will be available with Kali Linux virtual machines.

Sam Bowne, Community College of San Francisco, San Francisco, CA

Eugene

Bring Your Content to Life: How to Create Interactive E-books, Lessons, and Apps

Interested in developing interactive E-books, lessons, and apps? E-MATE, E-books and Mobile Apps for Technician Education is a three-year NSF ATE funded project to develop interactive E-books and complementary apps. The E-MATE project team is also developing a framework any educator can reference to develop interactive E-books, lessons, modules, and apps. The team will share information about its collaboration with OP-TEC.

Michael Qaissaunee, Kelly Parr, E-MATE, Brookdale Community College, Lincroft, NJ; Gordon Snyder, OP-TEC, Waco, TX

Medford

Creating Micro Devices Exploiting Crystal Structure: Hands-on Crystallography

Creating microstructures such as proof masses in accelerometers, thin film membranes and chambers for pressure sensors, and nozzles in ink-jet print heads requires leveraging the crystalline structure of silicon in micro-manufacturing. This workshop provides the knowledge and tools necessary for technicians to understand crystallography in micro fabrication.

Matthias Pleil, Southwest Center for Microsystems Education, Albuquerque, NM

Mt. Hood

Achieving Broader Impact and Scale for Your Successful Projects

After enjoying early success in your project, how do you go on to realize deeper and broader impact? You will be challenged to think about impact and scale in new ways; try out resources for the planning, formation, and role of communities of practice; and explore findings on how they can contribute to broader impact and scale. Attention will be given to the roles of industry networks, shared project ownership, and multiple perspectives.

Deborah Boisvert, BATEC, Boston, MA; Elaine Johnson, Bio-Link, San Francisco, CA; David McNeel, Nashville, TN

Oregon Ballroom, Salon H

Broadening Access to Mathematics Education: Effective Tools, Methods, and Technologies

Experience math learning through the eyes of students who struggle with language. With an emphasis on experiential learning, the presenters will provide effective instructional approaches. Developed for deaf students, these approaches address the needs of all students who struggle with math due to language difficulties.

Gary Blatto-Vallee, Dawn Kidd, Carol Marchetti, DeafTEC, Rochester, NY
Preconference TUESDAY

Must be registered to attend preconference events.

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

8:00–8:30 A.M.
Continental Breakfast (for workshop attendees; Oregon Ballroom, Salon E)

8:00 A.M.–5:00 P.M.
Mentor-Connect (by invitation; Oregon Ballroom, Salon I)

8:30 A.M.–Noon
Refreshment Break • 10:00–10:30 Oregon Ballroom Foyer

PRECONFERENCE WORKSHOPS
Roadmap to Mechatronics: Programming with PLCs (Oregon Ballroom, Salon A)
Hands-on Virtual Laboratories and Online Courses for IT (Oregon Ballroom, Salon G)
Microcontroller Designs Using the Arduino (Eugene)
We Sometimes Forget: Non-Technical Skills Are Important (Columbia)
Strategies for Competitive NSF Proposals (Oregon Ballroom, Salon CD)

Noon–1:00 P.M.
Lunch on Your Own

PRECONFERENCE SITE VISITS
1:30–3:00 P.M. Bonneville Lock and Dam
(Bus loads at 12:15. Meet in hotel lobby. Box lunch included.)
1:30–4:00 P.M. Cutting Edge Green Walking Tour
(Meet in hotel lobby at 1:15.)
1:30–3:00 P.M. Vestas-American Wind Technology, Inc.
(Bus loads at 1:00. Meet in hotel lobby. No lunch provided.)

4:00–7:00 P.M.
OP-TEC Meeting (by invitation; Oregon Ballroom, Salon CD)

6:00–8:00 P.M.
FLATE Mechatronics Reception (by invitation; Mt. Hood)
Roadmap to Mechatronics: Programming with PLCs
This workshop focuses on the integrating aspect of communications in mechatronics systems. PLC programming exercises will demonstrate the applicability of small trainers to larger trainers and industrial systems. Participants will learn ways to integrate this equipment into mechatronics programs and opportunities for outreach and professional development.

Marilyn Barger, FLATE, Tampa, FL; Alessandro Anzalone, Hillsborough Community College, Tampa, FL; Ernie Friend, Florida State College, Jacksonville, FL; Dan Horine, Virginia Western Community College, Roanoke, VA

Experiences With Hands-on Virtual Laboratories and Online Courses for Information Technology
This workshop will feature over 100 online courses and over 200 virtual laboratories that are freely available for use by community colleges, primarily as a result of NSF grants and other grants such as DOL TAACCCT grants. Materials are open source, available for reuse with attribution. Also featured will be hands-on activities using labs and online materials as examples.

Ann Beheler, National Convergence Technology Center, Frisco, TX; Ernie Friend, National Convergence Technology Center, Jacksonville, FL; Elizabeth Halweg, National Convergence Technology Center, Appleton, WI

Implementing Embedded Microcontroller Designs in Student Research Projects Using the Arduino
For the past several years the Connecticut College of Technology has conducted NSF-funded student research programs. During the design process, embedded microcontrollers are often required. Most community college students have had no experience in microcontroller programming. This workshop will demonstrate that learning how to program microcontrollers is made easy by utilizing the Arduino platform. Attendees should bring their own laptops.

W. Charles Paulsen, CT College of Technology, Newtown, CT; Eric Flynn, Gateway Community College, New Haven, CT; Karen Wosczyna-Birch, Regional Center for Next Generation Manufacturing, Farmington, CT

We Sometimes Forget: Non-Technical Skills Are as Important as Technical Skills
“Give me an employee who is a self-starter and a critical thinker.” “I need employees who can work in teams but are still self-sufficient.” Requirements like these are frequently heard from employers, yet it is often difficult to teach these non-technical skills in technical programs. This workshop will help participants learn about, and then practice, integration of non-technical skills into technical activities by changing the question, changing the order, and working together. Participants will leave with examples, ideas, and application approaches for their curricula.

Deb Newberry, Billie Copley, Nano-Link, Rosemount, NM

Strategies for Preparing and Submitting Competitive Proposals to the National Science Foundation
This interactive workshop will inform participants about the trajectory of an NSF grant proposal from idea to receipt of an award letter and project management. Included in this session will be a discussion of elements of competitive proposals, a description of the National Science Board’s review criteria of Intellectual Merit and Broader Impacts that all NSF proposals undergo, and close examination of an actual NSF proposal.

David Brown, Celeste Carter, National Science Foundation, Washington, DC
Preconference Site Visits

Bonneville Lock and Dam

1:30–3:00 p.m. (Bus will board at 12:15. Meet in hotel lobby. Box lunch will be provided.)

This site visit will allow attendees to tour a historical hydropower generating power dam built in 1938. Attendees will be able to walk on top of the generators and see the original and second powerhouse. A special underwater viewing of fish is also available. (No backpacks allowed, unless needed for medical reasons. These will be searched.)

Cutting Edge Green Walking Tour

1:30–4:00 p.m. (Tour will meet in hotel lobby at 1:15. No lunch provided.)

This is a sustainability and urban design tour. See how Portland is using urban design, innovation, and green building technology to prepare for the future and create a 21st-century livable city. The site visit will take a little over 2 hours and involve about 1.5 miles. (Please wear comfortable shoes and come dressed for the Oregon weather.)

Vestas-American Wind Technology, Inc.

1:30–3:00 p.m. (Bus will board at 1:00. Meet in hotel lobby. No lunch provided.)

This site visit will feature the manufacturing, sales, construction, and service of wind turbines. Attendees will also learn how Vestas is living the brand in Oregon in its state-of-the-art LEED Platinum building. Vestas recently scored a 99 on the Energy Star rating—the highest score ever given. (Photos are allowed only in certain areas and not of desks.)
7:00 A.M.–5:00 P.M.
Registration (Oregon Ballroom Foyer)

7:45–8:30 A.M.
Continental Breakfast (Oregon Ballroom)

8:30–9:45 A.M.
Opening and Keynote Presentation (Oregon Ballroom)

9:45–10:15 A.M.
Refreshment Break / View Exhibits
*Prize Drawing 10:00 (Lower Level 2)

9:45 A.M.–6:00 P.M.
Exhibit Hall Open (Lower Level 2)

10:15–11:00 A.M.
1A Preparing to Implement Private Clouds (Oregon A)
1B Best Practices for Workforce Development (Oregon BC)
1C Funding Assistance from Mentor-Connect (Mt. Hood)
1D Engineering Tech Education NAE Report (Columbia)
1E Career Pathways in the Bio-Link Network (Eugene)
1F Never Go in With Blank Paper (Belmont/Laurelhurst)
1G Emerging Trends in Mechatronics Education (Pearl)
1H Team Tech Transport (Oregon D)

11:15 A.M.–Noon
2A Penetration Testing—Ethical Hacking (Oregon A)
2B Competencies in the Geospatial Industry (Oregon BC)
2C Strong Foundations (Columbia)
2D Pathways to Logistics Fields for Students (Oregon D)
2E Bio/Nanotechnology in Pasadena City College (Eugene)
2F Nanotechnology Teacher Lending (Belmont/Laurelhurst)
2G Supply Chain Technicians In Demand (Pearl)
2H Make Your Projects Shine (Mt. Hood)

Noon–1:00 P.M.
Awards Luncheon (Oregon Ballroom)

1:15–2:00 P.M.
3A Hashing Algorithms in Digital Forensics (Oregon A)
3B Collaborating on ICT/DM Career Pathways (Oregon BC)
3C Maximizing Business-Industry Relationships (Oregon D)
3D Maximizing STEM Impact on a Small Budget (Pearl)
3E Biosciences Industrial Fellowship Project (BIFP) (Eugene)
3F Int’l Workforce Ed Skill Standards (Belmont/Laurelhurst)
3G Engaging Students in Technology (Columbia)
3H Funding Opportunities at NSF (Mt. Hood)

2:15–3:00 P.M.
4A Introduction to SAS Programming (Oregon A)
4B Developing Cybersecurity Curriculum (Oregon BC)
4C Labor Market on Big Data, Cybersecurity (Oregon D)
4D German Student Exchange Program Model (Pearl)
4E More Women in Advanced Technology (Belmont/Laurelhurst)
4F Learning from Working Technicians (Oregon GH)
4G Pathway Model to Meet Industry Needs (Columbia)
4H Building IMPACT in Nebraska Manufacturing (Mt. Hood)

3:00–3:45 P.M.
Beverage Break / View Exhibits
*Prize Drawing 3:20 (Lower Level 2)

3:00–6:00 P.M.
View Poster Sessions (Lower Level 2)

3:45–4:30 P.M.
5A Fighting Cyber Crime Globally (Oregon A)
5B FAS4ATE: Online Project Evaluation (Oregon BC)
5C Matrix Collaboration Leads to Success (Oregon D)
5D sySTEMic Recruiting for Process Technology (Pearl)
5E CIS 105—Portfolio Model (Eugene)
5F Mfg Ed in Rural Connecticut (Belmont/Laurelhurst)
5G Hi-Low Tech in a College Makerspace (Columbia)
5H Science Labs on Demand (NSF and TAACCCT) (Mt. Hood)

4:30–6:00 P.M.
Exhibit Hall Reception / Poster Sessions
*Prize Drawing 5:00 (Lower Level 2)

*Must be present to win prize drawings.
Opening and Keynote Presentation

Oregon Ballroom • 8:30–9:45 a.m.

Special thanks to Celine Clark, music major at Clackamas Community College, for singing the National Anthem.

Michele Weslander Quaid

Creating a Culture of Innovation

Michele was formerly Google’s Chief Technology Officer (Public Sector) and Chief Innovation Evangelist. Google’s renowned innovative culture is built on core philosophies that include “ideas come from everywhere.” Learn from Michele’s extensive experience in leading change and innovation, as she shares her insights and recommendations for inspiring a shared vision and engaging your students to believe in themselves, hone their talents, pursue their passion, and discover their purpose.

Refreshment Break
View Exhibits
Lower Level 2 • 9:45–10:15 a.m.

Prize Drawing
10:00
Sessions • 10:15–11:00 A.M.

1A Oregon Ballroom, Salon A (Lower Level 1)

Preparing Students to Implement Private Clouds
This presenter will discuss the implementation of the current private cloud technology for two courses leading to an Advanced Certificate in Virtualization/Private Cloud. Our NSF grant meets the needs of the IT community by preparing skilled technicians in the advancing field of the private cloud. Two approaches were implemented: Microsoft Private Cloud Technology and open-source OpenStack Cloud Technology. The presenter will detail his experiences in making the leap from industry expectations to performance objectives, which culminated in realistic lab activities.

Ron Carswell, SAC Virtualization/Private Cloud Center, San Antonio, TX

1B Oregon Ballroom, Salon BC (Lower Level 1)

Processes and Best Practices for Emerging Technology Workforce Development Programs
NACK and its partners have compiled a handbook of proven methods conducted by successful nanotechnology programs across the nation. This session explores the process used to create the handbook. From student outreach and recruitment activities to working with industry partners, this session will examine successful programs around the country and lead participants in discussions on how to implement these strategies into other technology programs. All session participants will receive a copy of the Handbook of Processes and Best Practices for Nanotechnology Workforce Development.

Roxanna Montoya, MATEC Networks, Phoenix, AZ; Robert Ehrmann, NACK, University Park, PA; Sam Agdasi, Ivy Tech Community College, Southbend, IN

1C Mt. Hood (Level 2)

Success Strategies for NSF ATE Funding with One-on-One Assistance from Mentor-Connect
The NSF-funded Mentor-Connect project can help you prepare a competitive proposal. The focus is on an Advanced Technological Education (ATE) Program funding track for institutions that are new to ATE. This unique funding opportunity offers up to $200,000 for projects designed to improve science and engineering technician education programs or teacher preparation programs that focus on technological education. This small grants opportunity is designed for institutions that have not received NSF funding in the past 10 years. Participants will receive a self-assessment of readiness to write a proposal, self-help resources, and insights from those who have benefited from Mentor-Connect.

Elaine Craft, Charlotte Forrest, SC ATE Center of Excellence and Mentor-Connect: Leadership Development and Outreach for ATE, Florence, SC; Celeste Carter, National Science Foundation, Washington, DC

1D Columbia (Lobby Level)

Status, Role, and Needs of US Engineering Technology Education: Report on an NAE Study
Calls to improve the U.S. technical workforce often focus on the quality and number of four-year engineering graduates. Less attention has been paid to two- and four-year engineering technology (ET) degree holders. The National Academy of Engineering is nearing completion of a study of the status and needs of ET education. The project involved a review of federal education and employment data, a literature review, and an online survey of ET educators who employ ET graduates. In this session, two members of the study committee and the NAE staff lead will discuss the study.

Greg Pearson, National Academy of Engineering, Washington, DC; Mel Cossette, National Resource Center for Materials Technology Education, Lynnwood, WA; Dan Hull, The National Center for Optics and Photonics Education (OP-TEC), Waco, TX
Updating Information on Biotechnician Career Pathways in the Bio-Link Network

Career pathways are always changing as a result of changes in funding streams, legislative mandates, the economy, and lifestyles. Come learn how these factors have changed career pathways in the Bio-Link network.

Linnea Fletcher, Sulatha Dwarakanath, Joseph Oleniczak, Bio-Link, Austin TX

Working With Industry: Never Go in With a Blank Piece of Paper

Working with industry is a critical aspect of any technician program. A major portion of the educators’ interaction with industry personnel includes understanding the skills, knowledge, and abilities (SKA) required for employees and used to create student outcomes. Often educators are unsure where to start, how to find the right industry person, or how to collect information in advance of a meeting with industry. This session will cover steps and methodology and where to find information needed to make contacts with industry a success. Topics will include: working with SEC codes; how to glean information from job postings, patents, and websites; finding the right contact; and working with professional organizations.

Deb Newberry, Nano-Link, Rosemount, MN

Emerging Trends in Mechatronics Education

Mechatronics is an emerging advanced technology that supports a broad array of industry sectors including energy, manufacturing, supply chain, transportation, and municipal utilities. To keep up with technology and workforce needs, traditional mechanical and electromechanical programs have had to evolve, adding a new communication layer to the already complex systems that we might call “smart machines.” A panel of educators and industry representatives will discuss emerging trends in mechatronics education. Topics will include: industry certifications, industry needs, online learning, and remote equipment access.

Marilyn Barger, FLATE, Tampa, FL; Alessandro Anzalone, Hillsborough Community College, Tampa, FL; Ernie Friend, Florida State College, Jacksonville, FL; Dan Horine, Virginia Western Community College, Roanoke, VA

Team Tech Transport: An Engaging 21st-Century Classroom Model

Lansing Community College’s Digital Innovation Institute was given the challenge of converting a charter bus into a classroom on wheels. The goal of the bus is to increase interest in and knowledge of STEM careers among middle and high school students. Rather than furnish the classroom with conventional chairs and tables, the design team produced a curriculum that turns the bus into the deck of a spaceship. Students take on roles—captain, engineer, medic, and others—in which they face challenges that require collaboration and critical thinking. The experience is guided by an instructor and interactive software.

Sean Huberty, Aaron Mundale, Lansing Community College, Lansing, MI
**Sessions • 11:15 A.M.–Noon**

**2A Oregon Ballroom, Salon A (Lower Level 1)**

**The Art of Penetration Testing: Teaching Ethical Hacking**
This session will help attendees understand the hacker’s perspective and methodology. The presenters will show participants how to scan, test, analyze, hack, and secure their own systems, and will discuss the latest tools used in courses such as Network Forensics, Ethical Hacking, and Malware Analysis. The session will cover common attacks used by hackers to exploit systems, such as SQL injection, Spear Phishing, RAT tools, and Cryptolocker. The presenters will perform a live demonstration of these techniques and will show how to create, pack, and deploy malware in a realistic network environment, and then view possible artifacts left on the system. The presenters will also share access to an online virtual labs library available through the CSSIA ATE Resource center.

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

**2B Oregon Ballroom, Salon BC (Lower Level 1)**

**Defining Competencies Within the Geospatial Industry**
In collaboration with the U.S. Department of Labor (DoL), the GeoTech Center has updated the Geospatial Technology Competency Model (GTCM) so that it can remain relevant for the geospatial industry. Because of the impending update to the Geographic GIS&T Body of Knowledge and the GIS Certification Institute’s move to base its exam on tier 4 of the GTCM, it was time to review the GTCM competencies. This session will begin with a review of the GTCM update process and subsequent competency-driven efforts.

   Rodney Jackson, GeoTech Center, Thomasville, NC

**2C Columbia (Lobby Level)**

**Strong Foundations With a Little Bit of Everything**
Hear from industry and education partners how the Regional Center for Nuclear Education & Training (RCNET) is making students more hirable after graduation. The discussion will focus on how building industry partnerships, cross-training students into other disciplines, and embedding recognized certifications increase the probability of students attaining employment upon graduating. Presenters will cover topics such as talent management as a core business strategy, leveraging of collaborative partner networks, and alignment of end-to-end performance. Further discussion will be on ensuring that certifications are relevant and earned as part of the degree program while providing up-to-date hands-on training from local employers.

   Kevin Cooper, Jamey Capers, RCNET, Fort Pierce, FL; Clay Goodman, Estrella Mountain Community College, Avondale, AZ; Stacey Presnell, Energy Northwest, Richland, WA

**2D Oregon Ballroom, Salon D (Lower Level 1)**

**Pathways to Logistics Fields for Students**
With continued growth in global trade facilitated through increasingly high-tech intermodal ports, logistics plays a crucial role in sustaining our nation's economy, trade, and security. The NSF SMART (Southeast Maritime and Transportation) Center and its educational and industry partners have partnered with the American Society for Transportation and Logistics to increase awareness of logistics career opportunities, expand stackable credentials, and develop effective career pathways. Learn how school systems are implementing career pathways that award graduating high school students with college credit and industry credentials, and about job opportunities at ports nationwide for students in this high-tech field.

   Barbara Murray, SMART Center, Virginia Beach, VA; Laurie Denham, American Society of Transportation and Logistics, Chicago, IL; Mitzi Plunkett, South Broward High School, Hollywood, FL; Gilda Ramirez, Port of Houston, Houston, TX
2E Eugene (Lower Level 1)

Bio/Nanotechnology in Pasadena City College’s Early Career Undergraduate Research Experience (eCURe)

The Early Career Undergraduate Research Experience (eCURe) at Pasadena City College is designed to give students research experience in the natural or physical sciences. Current eCURe research projects involve synthetic chemistry and characterization techniques used in bio/nanotechnological applications. Students are devising new methods of biodiesel production from sustainable resources and learning about bioinformatic tools used in state-of-the-art biotechnology laboratories. In collaboration with UC Riverside, UCLA, CSU Long Beach, and Penn State University’s Nanotechnology Applications Career Knowledge Network, PCC is providing students with hands-on experience using advanced analytical equipment.

Jillian Blatti, Jared Ashcroft, Pasadena City College, Pasadena, CA

2G Pearl (Level 2)

Introducing Another Career Option for Your Students: Supply Chain Technicians Are In Demand!

Supply Chain Technician (SCT) skill requirements are similar to those for students taking mechatronics, advanced manufacturing, and industrial maintenance programs of study. Adding Introduction to Automated Warehousing, a course developed by the Center for Supply Chain Technology Education, will provide another career pathway for students completing these programs. SCT will introduce participants to curriculum and the accompanying open source E-Book developed for this course in partnership with E-Mate. The U.S. Bureau of Labor Statistics projects job growth in the field to be as high as 28%, or 120,000 new positions created by 2020. Equip your students to compete for these in-demand high-wage jobs!

Elaine Gaertner, National Center for Supply Chain Technology Education, Norco, CA; Kelly Parr, Brookdale Community College, Lincroft, NJ

2F Belmont/Laurelhurst (Level 2)

An AFM/SEM Tools of Nanotechnology Teacher Lending Program

This session will demonstrate the use of portable AFMs and SEMs in a “nanotools” lending program. Participants will receive an overview of the theory and usage of portable AFMs and SEMs. Participants will learn how to load and measure small samples of materials ranging from silicon wafers to chemical and biological samples. After teachers complete this program they are able to “check-out” either NEATEC’s AFM or SHINE’s SEM to use in their schools and colleges to complement the hands-on activities of their nanoeducation programs. Participants from other ATE centers can learn how to implement a lending library with their equipment as well.

Ryan Munden, NEATEC, Fairfield, CT; Jonathan Ashdown, Abraham Michelen, NEATEC, Troy, NY; Mike Blok, Beaverton High School, Beaverton, OR; Peter Kazarinoff, Kristine Schroeder, SHINE, Seattle, WA; Keith Grosse, Lake Oswego HS, Lake Oswego, OR

2H Mt. Hood (Level 2)

Tools, Resources, and Strategies to Make Your Projects Shine

Ready to take your project to the next level? Or are you considering applying for an ATE grant? In this interactive session, panelists from ATE projects and centers that offer resources and support to faculty and project managers will lead roundtable discussions and share resources and tools for managing and disseminating successful projects. Participants will select three roundtables to join to learn about newsletters, summer camps, publications, teachingtechnicians.org, Twitter, Facebook, videos, webinars, Outreach and Social Media Kits, and lots more!

Marilyn Barger, FLATE, Tampa, FL; Rachael Bower, ATE Central, Madison, WI; Anna Koliopoulous, SC ATE Center of Excellence, Florence, SC; Michael Lesiecki, MATEC Networks, Phoenix, AZ; Anthony Manupelli, Pellet Productions, Reading, MA
**Educator of the Year Award**

Recipient: Robert C. Decker, Engineering Technologies and STEM, Mohawk Valley Community College (MVCC)

As a Co-PI and sub-awardee of NEATEC, Bob Decker has contributed to the development of workshops normally offered to students to enhance their opportunities to work in the semiconductor field, to technicians already working to improve their skills, and to educators to enhance their abilities to teach high-technology classes. These workshops have included topics in RF and automation technologies and other areas.

Bob’s contributions to NEATEC include overseeing the quality of the materials produced by NEATEC for the K-12 and community college communities, preparation of materials for reports and meetings, and participation in and organization of annual NEATEC conferences.

Bob has championed efforts at Mohawk Valley Community College to develop and enhance programs to address industry needs and help students gain skills to support their performance in the workplace.

Bob is a professor at MVCC who earned his AAS in electrical engineering technology in 1973 from MVCC, his BT in engineering technology in 1975 from the State University College at Buffalo, his BS in physics in 1980 from Utica College of Syracuse University, and his MSEE in 1989 from Syracuse University, Syracuse, NY. Bob’s professional experience marries careers in education and private business. His industry experience as a senior electrical engineer for Thomson Consumer Electronics, as an electrical engineer at General Electric Company, and as an engineering technician with General Electric Company gave Bob real-world experience before entering the field of education.

**Innovative Program Award**

Recipient: Gary Young, Advanced Manufacturing Program, Ranken Technical College

Gary Young has been with Ranken Technical College since 2013. He has over 28 years of experience in industrial machining. He has utilized and honed this experience in establishing the Advanced Manufacturing Technology program at Ranken Technical College in Wentzville, Missouri. During this time, he has established rapport with area manufacturers that utilize Ranken students for internships and full-time employment positions. He has served on multiple public education school boards and served community organizations. He has established a solid instructional staff at Ranken along with an active program advisory committee.

Ranken’s Advanced Manufacturing Technology program prepares students for employment with companies that have implemented team-oriented design, production, quality, and maintenance systems within the modern manufacturing environment. The Advanced Manufacturing Technology curriculum is typically a four-semester program that leads to either an associate of science or technology degree. The curriculum consists of a rotation of eight weeks of classroom instruction and eight weeks of training in a live production facility. Classroom instruction for the associate degree includes 28 credit hours of advanced manufacturing-specific training.
Strong partnerships with area employers are key to the program, ensuring that Ranken students train on the latest technology and current tools and machines. Their students intern with industry leaders such as Tech Manufacturing, Homeyer Precision Machining, Component Bar, Seyer Industries, Patterson Tool and Mold, and Designs for Tomorrow Inc. In their state-of-the-art shop, students learn to program and operate computer numerical control (CNC) machines and devices and perform inspections, maintenance, and quality assurance on a wide range of equipment. In-house work cell participants also gain experience in logistics, human resources, and finance, while machining parts for Hunter Engineering, Ehrhardt Tool and Machine, and SCF Services.

When Ranken students enter the workforce, they have the skills, experience, and work ethic necessary for a successful career!

**Industry Recognition Award**

*Recipient: James Auld, NextEra Energy, Inc.*

“About six years ago, the nuclear industry needed a workforce champion. The industry was entering an age barrier where growth would become workforce limited. In essence, the industry would suffer severe detriments if a new and skilled workforce wasn’t developed. Jim grasped the challenge with a multi-level approach and became that much-needed champion. Not only at Indian River State College (IRSC), but across the nation, he helped schools find SMEs, worked with industry partners to obtain millions of dollars in donations, and helped form RCNET. He truly became the champion that saved the nuclear industry.”

Kevin Cooper, Executive Director, RCNET

James Auld serves as Director of External Training Initiatives for NextEra Energy, Inc. and Florida Power & Light Company. NextEra Energy is a leading clean energy company.

James’s primary duties include external workforce development initiatives. He works closely with colleges and universities to ensure a robust pipeline of well-educated and highly skilled energy professionals.

James supports national workforce development efforts by serving on the Nuclear Energy Institute Talent Taskforce, supports the CEWD, serves on the Energy Providers Coalition for Education, chairs the Manufacturers of Florida board, and serves on Veterans Affairs committees.

James is working with RCNET and partner schools to develop a chemistry technician program to complement the existing radiation technician program (RPCT). RPCT students will train on advanced technological equipment. The program will produce technicians with skills in both chemistry and radiation protection resulting in exemplary nuclear professionals.

Through James’s collaborative efforts with RCNET and partnered community colleges in Florida, over 260 technicians gained employment in the energy industry. Building on the success of the nuclear talent pipeline model, James’s role has expanded nationally to include wind, line workers, and substation and power generation. Working strategically in collaboration with educators, utilities, labor organizations, and the RCNET, James is helping to build a strong and growing energy workforce.
Sessions • 1:15–2:00 P.M.

3A Oregon Ballroom, Salon A (Lower Level 1)

**Hashing Algorithms and Their Use in Digital Forensics Investigation**

This content was developed by the IT Academy @ IUPUI in partnership with Connie Justice, director of IT Security Education and Experiential Learning at Purdue School of Engineering and Technology IUPUI. This presentation will describe the hash function’s use in a digital forensics investigation and have the students perform a lab to cement their understanding of the learning goals of the class. The tools used in the activity are all open-source. They include: a BackTrack 5R3 live iso, dd, and md5deep. The method described in this activity was integral to the development and testing of a tool created by a graduate student at IUPUI designed to explore a different method of digital forensics investigation. Students will receive instructions for the lab activity, a “warrant” to investigate the evidence, a “cheatsheet” with command syntax with md5deep, dd, and other tools.

Nicholas Novotny, IT Academy @ IUPUI, Indianapolis, IN; Connie Justice, Purdue School of Engineering and Technology, Indianapolis, IN

3C Oregon Ballroom, Salon D (Lower Level 1)

**Maximizing Business and Industry Relationships to Improve Your Program and Help Your Students**

The relationship between educators and business and industry leaders is the cornerstone for any successful program to make sure the skills the students learn are the skills business and industry need. Learn how to get the most out of your business and industry leaders by recruiting a balanced, engaged group; strengthening your meetings’ format; implementing a streamlined annual DACUM process to evaluate knowledge, skills, and abilities; involving executives in capstone classes; and nurturing your relationship with them. Hear from two IT business executives about their experience working with the National Convergence Technology Center.

Ann Beheler, National Convergence Technology Center (CTC), Frisco, TX; Matt Glover, Harman Int’l., Richardson, TX; Tu Huynh, Comerica Bank, Dallas, TX

3B Oregon Ballroom, Salon BC (Lower Level 1)

**A Framework for Collaborating for Student Success on ICT/DM Career Pathways**

ICT/DM education has five years to fill the demand for a million new jobs that will be created by 2020. This is an ambitious goal and nearly impossible to achieve without engaged, committed collaboration among an increasingly diverse set of stakeholders. Based on leadership across pathways projects in the San Francisco Bay Area and Southern California, we’ve begun to analyze effective stakeholder collaboration as a key to increasing student success in ICT/DM career pathways. During this session, we will present a framework and engage discussion to further define what collaboration really means, the expected outcomes, and how outcomes can be measured.

Olivia Herriford, MPICT, San Francisco, CA; Theresa Rowland, Career Ladders Project, San Francisco, CA

3D Pearl (Level 2)

**Maximizing STEM Impact on a Small Budget**

This interactive session will introduce participants to the Light and Optics Exploration Kit developed by LASER-TEC for K-12 teacher professional development. This low-cost kit enables teachers to explore the exciting field of light, lasers, and fiber optics. The kit is versatile and cross-disciplinary and is complete with detailed lesson plans, online videos, handouts, and supplementary e-resources. It can be used both in the classroom and for outreach events. The Light and Optics Exploration Kit has been used by over 50 STEM teachers in the Southeast and has enhanced the learning experience of over 3,000 students.

Chrysanthis Panayiotou, Natalia Chekhovskaya, LASER-TEC, Southeast Regional Center for Laser & Fiber Optics Education, Fort Pierce, FL
Biosciences Industrial Fellowship Project (BIFP): 30-Day Professional Development for Instructors

The aim of BIFP is to expose instructors to the biosciences, even instructors in other fields. In year one, we had a diverse group of instructors and one military veteran attend the BIFP. The month-long immersion made time for bench sessions and visits to academic institutions and companies. The BIFP Fellows developed modules designed to contextualize the experience in their classrooms. (For example, the project would give English teachers new contexts for teaching technical writing.) The project has received high ratings. This presentation will share the experience.

Russ Read, National Center for the Biotechnology Workforce Consortium for Biosciences Credentials (c3bc), Winston-Salem, NC

Developing International Workforce Education Skill Standards for the Technology Workforce

It is always challenging to ensure that your students are being armed with the skills required by your program’s industrial “customers.” This is especially true in emerging technology areas where the target is ever-changing and opinions are many. The Micro / Nano Tech (MNT) ATE Centers led by the NACK Network have addressed this challenge, in partnership with industrial, government, and academic stakeholders, by creating a series of internationally recognized workforce education standards through ASTM International. Learn more about the approach we took, the lessons we learned, and the value of working with a standards organization.

Robert Ehrmann, Terrence Kuzma, Wook Jun Nam, NACK Network, University Park, PA; Peter Kazarinoff, SHINE, Seattle, WA; Deb Newberry, Nano-Link, Rosemount, MN; Raymond Tsui, Arizona State University, Tempe, AZ

Engaging Students in Technology through Innovation, Industry, and Entrepreneurship

How do we make college students stand out in today’s competitive workplace environment? By exposing them to both the professional and technical components that are involved in real-life industry-based engineering and technology projects. This session will focus on how the Regional Center for Next Generation Manufacturing (RCNGM) and the Manufacturing and Mechanical Engineering Technologies Program (MET2) integrate entrepreneurship, modern technology, and engineering principles into a program that teaches students how to work with faculty and company mentors on product design, from concept to finished prototype.

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

Funding Opportunities at the National Science Foundation to Support Undergraduate STEM Education

The National Science Foundation (NSF) provides support for curricular and programmatic innovation in STEM education and research, STEM workforce development, and scholarships for undergraduate students in STEM. This presentation will provide an overview of programs within the NSF Division of Undergraduate Education and elsewhere within NSF that community college STEM educators are encouraged to consider as potential sources of support at their institutions. Information will be presented regarding the missions of various NSF programs, budget criteria, and tips for preparing competitive proposals. Interactive discussion is welcome and encouraged.

Celeste Carter, David Brown, National Science Foundation, Arlington, VA
4A Oregon Ballroom, Salon A (Lower Level 1)

Introduction to SAS Programming
SAS is a powerful data management and statistical analysis software package used extensively in the biotech industry, finance, government, clinical, and academic research. Data is everywhere today and SAS skills are in high demand. The presenter will show participants how to write simple SAS programs, conduct elementary statistical analysis, and present the output results using the SAS® window environment.

Meili Xu, Ohlone College, Fremont, CA

4B Oregon Ballroom, Salon BC (Lower Level 1)

Developing a Comprehensive Cybersecurity Curriculum in a Collaborative Learning Environment
The primary goal of this NSF-funded project was to develop a comprehensive cybersecurity curriculum that would be more inclusive of women and other underrepresented groups. We looked at learning theories and what they tell us about environments that appeal to diverse groups of students. In this presentation we will share how we remodeled our classrooms to create collaborative learning spaces. We will look at how we updated both our online curriculum and our face-to-face courses to include inquiry-based collaborative learning.

Debbie Reid, Cheryl Calhoun, James Nichols, Santa Fe College, Gainesville, FL

4C Oregon Ballroom, Salon D (Lower Level 1)

Labor Market Analysis on Big Data and Cybersecurity
Broadening Advanced Technological Education Connections (BATEC) has partnered with Burning Glass to analyze labor market data to scope out middle skill jobs in nine areas of computing, with added emphasis on jobs in the emerging fields of Big Data and Cybersecurity. This session will share results and engage participants in discussions about how this can inform their programs.

Deborah Boisvert, Lou Piazza, BATEC, Boston, MA

4D Pearl (Level 2)

Two Steps Ahead: International German Student Exchange Program Model
This session provides detailed information about a prestigious and challenging engineering program that builds on the University of Alabama’s longstanding relationship with German and other multinational automotive companies and their suppliers located in Alabama and the Southeast. The exchange program is designed to give students experience with state-of-the-art automotive engineering technology and exposure to the high-tech environment in the German state of Baden-Wuerttemberg, home to Mercedes-Benz, Porsche, Bosch, and ZF. In addition to technical knowledge, students will acquire cultural skills that make them more marketable to multinational companies in the global marketplace.

Bharat Balasubramanian, CARCAM/University of Alabama, Tuscaloosa, AL

4E Belmont/Laurelhurst (Level 2)

More Women in Advanced Technology: How To
Learn proven recruitment and retention practices and strategies so you can see more female students succeed in your STEM classes. The presenter will share proven practices and strategies that have increased female enrollment and female and male completion rates in STEM programs around the country. Participants will walk away with recruitment and retention strategies they can implement in their schools right away. This will be an interactive session with a worksheet you can bring back to your home institution.

Donna Milgram, Institute for Women in Trades, Technology and Science (IWITTS), Alameda, CA
2:15–3:00 p.m. Sessions (continued)

4F Oregon Ballroom, Salon GH (Lower Level 1)

Learning from Working Technicians Who Tell Their Stories from ATE Programs

Back by popular interest, this session will feature working technicians who tell their stories, share their work experiences, and help educators design learning experiences that prepare students for the workplace.

Elaine Johnson, Bio-Link, San Francisco, CA; Terryll Bailey, The Allison Group, Seattle, WA

4G Columbia (Lobby Level)

Developing a Successful Pathway Model to Meet Industry Needs

AMTEC’s goal is to “increase secondary to postsecondary transition and postsecondary to employment to meet industry needs.” In keeping with that goal, AMTEC designed an Employer Driven Career Pathway Model that supports the automotive manufacturing sector and advanced manufacturing sectors. Join us to hear from our industry and college partners how to provide a flexible career pathway that fits the unique needs of your students, employees, and employers.

Danine Tomlin, Automotive Manufacturing Technical Education Collaborative (AMTEC), Versailles, KY

4H Mt. Hood (Level 2)

Building IMPACT in Nebraska Manufacturing: Growing the Tech-Savvy Workforce (NSF and TAACCCT)

This interactive session will demonstrate how a DOL TAACCCT project consortium of Nebraska community colleges uses electronic resources, virtual worlds, and enhanced student mentoring to recruit, engage, and educate an advanced manufacturing workforce as part of its Diversified Manufacturing Technology (DMT) pathways. You will gain insight into the project’s blended instruction, Psychological Capital, DMT contextual remediation, and experience virtual simulations, “gaming” technology, and enhanced coach mentoring techniques. Session attendees will also learn about Creative Commons and the TAACCCT program which is the largest OER initiative in the world. Participants will receive access to resource libraries from DOL and NSF projects.

Daniel Davidchik, Colleen Nienaber, Central Community College, Columbus, NE; Robert Caldwell, Metropolitan Community College, Omaha, NE; Beth Vavrina, Southeast Community College, Lincoln, NE

Beverage Break

View Exhibits
Lower Level 2 • 3:00–3:45 p.m.

View Posters
Lower Level 2 • 3:00–6:00 p.m.

Prize Drawing

3:20
Fighting Cyber Crimes on a Global Scale—Virtual Tour of Microsoft Security Response Center

Cyber crimes are occurring on a global scale and affect everyone. To combat cyber crimes at this level, Microsoft established relationships with other tech companies and law enforcement agencies from around the world and created the Microsoft Security Response Center or MSRC. In this session you will learn about computer crimes, how cyber crimes and criminals have changed over time, and the affect and cost cyber crimes have on our society. This will not be a highly technical session.

Douglas Spindler, City College of San Francisco, San Francisco, CA

FAS4ATE: Online Project Evaluation Tools and Systems

To achieve intended objectives and learn and improve throughout a project or center’s life, ATE PIs and staff need sound information (data) for decision making. These data must be available in real time, or close to real time, throughout the funding cycle, not just annually via evaluation reports. However, many projects and centers simply do not have the time, resources, and expertise required to systematize the collection and use of this kind of information. This session will introduce the use of online logic model-based tools that can aid PIs in making formative evaluation-based decisions.

Gordon Snyder, OP-TEC, Waco, TX; Tom Pensabene, Midwest Center for Information Technology (MCIT), Omaha, NE

Working With Industry—How a Matrix Collaboration Approach Leads to Success

The need for skilled technicians in the American workforce can be addressed through collaborations between colleges and industries that include multiple points of contact from student internships to industry-focused capstone projects. For more than a decade, Florence-Darlington Technical College’s Industry Consortium has benefited industries, students, and the college by developing and participating in activities designed to “grow their own” technician workforce. College industry partners offer paid internships to students in technology programs. Course scheduling is modified to accommodate full-day, year-round internship work. This matrix approach is meeting industry’s need for workers, increasing student retention and success rates, and strengthening the economy.

Anna Kolliopoulos, SC ATE Center of Excellence, Florence, SC

sySTEMic Approach to Recruiting Technicians for Process Technology

This session is intended for higher education, industry, and K-12 professionals who seek to improve their recruitment strategies. Attendees will learn how a small community college collaborated with industry, community partners, K-12 school districts, non-profits, and college staff members to develop innovative recruiting strategies that exceeded enrollment goals. Participants will take away complete recruiting strategies that include assessment results.

Hugh Gallagher, Pradeep Kumar, Community College of Beaver County, Monaca, PA
CIS 105—Portfolio Model: Open Educational Resources, Agile System Development, and Student Portfolios

CIS 105, a basic required course titled "Survey of Computer Information Systems," is optimal for learning and teaching without a textbook, integration of the Agile System Development philosophy, and continuous improvement. The students’ portfolios create bodies of work that students are proud of, and that can be used to further enhance their academic and professional opportunities. Nanotechnology is introduced by crowdsourcing a database to show how nano- and disruptive technologies relate to the students’ intended fields. The latest iteration of the portfolio model resulted in a significant increase in retention.

Laurita Moore, South Mountain Community College, Phoenix, AZ

Hi-Low Tech: Students Build Slide Rules from Scratch in a College Makerspace

This session will focus on bridging the gap between traditional engineering curriculum and modern makerspace practices. Connecting theory to industry practices involves much more than 3D printing CAD files. It requires understanding design parameters, evaluating fabrication options, building prototypes, and assessing results. Attendees of this session will learn how Portland Community College developed a multi-disciplinary hands-on lab for its Manufacturing Processes class as a means to contextualize engineering principles. Students in this class constructed a pocket-sized slide rule from scratch using over a dozen processes ranging from digital design and fabrication to sheet metal formation and cold-head riveting.

Gregg Meyer, Donald Bell, Benjamin Hill, Portland Community College, Portland, OR

Using a National Credential to Advance Manufacturing Education in Rural Connecticut

The MADE (Manufacturing Associates Degree Education) in Northwestern Connecticut project uses the National Institute for Metalworking Skills (NIMS) credentialing to ensure that students are gaining the skills needed to meet the manufacturing workforce demands. Students earn both credentials and college credits that can be applied toward an associate degree. The credentials are also used as a means to evaluate the skills and knowledge of both incumbent workers and technical high school students so they can earn college credit for prior experience. This presentation was developed with the assistance of Larry Pomerleau, Oliver Wolcott Technical High School, Torrington, CT. This project is supported by NSF ATE grant 1400570 and the Regional Center for Next Generation Manufacturing.

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

Science Laboratories on Demand for Students With Unpredictable Schedules (NSF and TAACCCT)

The Science Skills Laboratory (SSL) is a multidisciplinary, flexible facility funded by Forsyth Tech’s DOL TAACCCT grant. This facility was established to accommodate students with unpredictable schedules. These students are given the opportunity to fulfill their laboratory assignment in a flexible lab setting. This laboratory is opened for extended hours and students may complete laboratory requirements as their weekly schedules allow. The facility supports student laboratory activities in biology, chemistry, and biotechnology courses. The facility has been very successful as positive student feedback has been received and expansion of the laboratory is underway.

Cheryl Burrell, Michael Ayers, Forsyth Technical Community College, Winston-Salem, NC
Using Flipped Classroom Resources to Teach Renewable Energy Technicians

This poster shows how the flipped classroom approach—using technology to deliver instruction outside the classroom and activity-based learning inside—has been successful in teaching basic DC circuit analysis, hydraulics and electrical control of hydraulic systems, and digital electronics at Columbia Gorge Community College.

Jim Pytel, CREATE and Columbia Gorge Community College, The Dalles, OR

Welding and Nondestructive Testing Professional Development Workshop

This poster demonstrates the outcomes from our workshop, which will review standards for basic welding processes and welding inspection certification and provide an overview of nondestructive testing methods for welding instructors at high schools, technical colleges, and community colleges.

Jacqueline Smith, Lyn Potter, Beth Ruta, Chattanooga State Community College, Chattanooga, TN

Commercial Trainers and Experiment Kits for Teaching Renewable Energy Manufacturing

This poster summarizes product information from major suppliers of the commercial trainers and experiment kits that are used to teach renewable energy manufacturing.

Wangping Sun, Oregon Institute of Technology, Wilsonville, OR

Technician Training and Transfer: A Collaboration Between Arizona State and Rio Salado College

Rio Salado College is collaborating with Arizona State University to create stackable certificates and transfer pathways for technician training in micro- and nanotechnologies. Through remote access and virtual field trips, students in underserved locations will develop skills relevant to a broad range of workforce settings and university degree programs.

Rick Vaughn, Jeanne Ratliff, Rio Salado College, Tempe, AZ

Hybrid Additive Manufacturing/Microelectromechanical Systems Micromirror Assembly

Single material construction of controllable micromirrors for directing light forces a choice between either high performance and limited movement transmission geometries, or lower performance and wider range of shapes. We eliminate constraints by using separate MEMS and AM parts, allowing customization of mirror speed and range for different applications. 1mm hexagonal mirrors are single crystal silicon, while polymer transmission structures are 3D printed onto the mirror underside using projection microstereolithography. An electronic comb driven paddle on a PCB will form the base. We built and tested a way to handle and place components.

Scott Merry, Peter Kazarinoff, SHINE, Seattle, WA
**Building the Next Digital Forensics Workforce for the Southeastern United States**

This poster focuses on the Advanced Cyberforensics Education Consortium’s efforts to enable collaboration between state led schools in Florida, Georgia, South Carolina, and North Carolina, and to raise awareness and build the pipeline of digital forensics talent.

  - **Johnathan Yerby, Kevin Floyd**, Advanced Cyberforensics Education Consortium, Middle Georgia State University, Macon, GA

**Teaching Mobile Device Forensics on a Shoestring Budget**

Forensic examination of mobile devices requires specialized training and tools, which often come with a high price tag. In this session we’ll discuss how we tackled these hurdles in teaching mobile device forensics with little-to-no cost to faculty or students, and with the added challenge of teaching this subject entirely online.

  - **Patrick Vilkofsky**, Advanced Cyberforensics Education Consortium, Daytona Beach, FL

**Convergence Technology Students Present a New Perspective**

Representatives of student projects from two CTC Convergence College Network (CCN) programs will provide an overview of recent research, problem-based learning projects, and career opportunities in the information communications technology space.

  - **Mauricio Aguilar**, El Centro College, Dallas, TX; **Edward Spagnoli**, Collin College, Frisco, TX

**c3bc: The Community College Consortium for Bioscience Credentials—Update**

C3bc, a twelve-college consortium, develops skills and competencies across the bioscience subsectors of lab skills, biomanufacturing, and medical devices, helping TAA-certified technicians and others get bioscience jobs and improving collaboration between colleges and industry.

  - **Russ Read**, National Center for the Biotechnology Workforce Consortium for Biosciences Credentials (c3bc), Winston-Salem, NC

**Expanding Photonics Technician Education in Michigan**

The 21st century will depend as much on photonics or light-based technologies as the 20th century depended on electronics. Baker College introduced an Associate of Applied Science in Photonics and Laser Technology program in fall 2013 with support from the NSF ATE program. The new program is now fully implemented and is graduating its first class. The session presents the grant project outcomes, challenges, and lessons learned.

  - **Anca Sala, Ellis Love**, Baker College of Flint, Flint, MI

**Correlating ACM Core IT Learning Outcomes with Associate Degree and Certificate Programs**

As a standing committee of the ACM Education Board, the Committee for Computing Education in Community Colleges (CCECC) delivered its final version (Oct 2014) of its curricular guidance for associate degree IT programs—capspace.org/ITreport/. The ACM Competency Model of Core Learning Outcomes and Assessment for Associate-Degree Curriculum in IT includes 50 core outcomes with assessment metrics.

  - **Elizabeth Hawthorne**, ACM CCECC, Bushkill, PA; **Cara Tang**, ACM CCECC, Vancouver, WA; **Cindy Tucker**, ACM CCECC, Georgetown, KY

**MET2: Real-World Technology Projects Encourage Entrepreneurship**

This presentation will discuss the merging of real-world technology projects with business and entrepreneurial training. Manufacturing and Mechanical Engineering Technologies Program (MET2) projects are highlighted, showcasing the journey from project proposal to prototype manufacturing. Projects highlighted include a Safety Harness communication system, a low-cost 3D-printed UAV kit, a 3D QR system for the visually impaired, and a musical interface.

  - **Karen Wosczyna-Birch, Wendy Robicheau**, Regional Center for Next Generation Manufacturing (RCNGM), Farmington, CT; **Eric Flynn**, Gateway Community College, New Haven, CT; **John Birch**, The Birch Group, Farmington, CT
**Poster Sessions (continued)**

**Bringing Together the New Curriculum and Industry Using the Comprehension Instructional Sequence Model**

Technological education should be interesting and fun and should focus on helping secondary students cultivate STEM skills. This poster illustrates how new standards can be integrated with CTE programs. A series of high-tech manufacturing lesson plans brings together the new standards and industry tours using the Comprehension Instructional Sequence (CIS) model. The CIS lessons facilitate both learning and teaching by building learners’ knowledge in STEM and high-tech manufacturing.

Danielly Orozco, Marilyn Barger, FLATE, Tampa, FL

**Micro Technology Resources and Support to Educate and Engage Your STEM Students!**

The Southwest Center for Microsystems Education (SCME) has a wide range of resources to facilitate educators who want to bring MEMS and microsystems to the STEM classroom. This session will provide information on hands-on kits, open and customizable online courses, workshops, webinars, animations, lectures, printed materials, cleanroom fabrication opportunities, implementation mentoring, career pathways, online technical meetings, and more! Come to the poster session to speak directly with the PI about our offerings and what we can do together to equip your students with the skills and background needed to contribute to this rapidly growing industry.

Matthias Pleil, SCME, Albuquerque, NM

**Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy Analysis of LiloTree Samples**

This poster will describe the work completed by SHINE student Amy Stegman as part of her student internship with SHINE industry partner LiloTree. Secondary electron scanning electron microscope images and energy dispersive x-ray spectra along with atomic composition of LiloTree samples will be presented.

Amy Stegman, Peter Kazarinoff, Kristine Schroeder, SHINE, Seattle, WA

**NBC² at Ten**

The Northeast Biomanufacturing Center and Collaborative (NBC²) is an NSF ATE Regional Center with a national and global reach in biomanufacturing education and training. The collaborative works with educators, industry, and organizations to build partnerships for biomanufacturing education and training and jobs in locales throughout the United States; produces textbook and hands-on curricula that include both biopharmaceutical and industrial biotechnology biomanufacturing applications; offers professional development conferences and workshops including the annual NBC² BIOMAN conference and Protein is Ca$h workshops; and disseminates all through its website at www.biomanufacturing.org. The poster reflects NBC²’s ten-year legacy and provides a prescription for ATE success.

Sonia Wallman, NBC², Blue Bell, PA

**What Would YOU Do With 1,000 Students? A Blueprint for STEM Discovery**

Youth Technology Academy (YTA) uses a project-based approach to interdisciplinary technical training. YTA enrolls high school students in mechanical and electrical engineering courses that have been embedded with contextualized math to increase math competencies while providing hands-on technical instruction using Arduino, Raspberry Pi, Robots, and Drones. Engineers from Rockwell, GrafiTech, NASA, and other industry leaders provide technical training and mentoring for students. High school students can either stay after school in their own buildings or travel to our college campus to receive college credit while learning to design, build, and program a robot and prepare for international competitions.

George Bilokonsky, Jason Abbott, Mary Kay Bitterman, Cuyahoga Community College, Cleveland, OH
7:30 A.M.–1:00 P.M.
Registration (Oregon Ballroom Foyer)

7:30–8:15 A.M.
Continental Breakfast in Exhibit Hall
*Prize Drawing 8:00 (Lower Level 2)

7:30 A.M.–Noon
Exhibit Hall Open (Lower Level 2)

8:15–9:00 A.M.
FEATURED International Year of Light (Mt. Hood)
6A Back to Basics: Windows Command Line (Oregon A)
6B Sustainable Change in ICT Education (Oregon BC)
6C Leveraging Partnerships (Oregon D)
6D Making Lasers Safe in Educational Labs (Pearl)
6E STEAM: Bridging Art and Computer Science (Eugene)
6F Dream It. Do It. Recruitment in Minn (Belmont/Laurelhurst)
6G Student Retention thru 21st-Century Ed (Columbia)

9:15–10:00 A.M.
7A Cybersecurity and Healthcare Info Tech (Oregon A)
7B Build-Your-Own Recruitment Video (Oregon BC)
7C Fully “Flipped” Developmental Math Course (Oregon D)
7D Texas Programs in Nuclear Uniform Curriculum (Pearl)
7E Unpacking Competencies (Eugene)
7F Introducing Females to Micro- and Nanotech (Mt. Hood)
7G National Institutes for Mfg Innovation (Belmont/Laurelhurst)
7H Cyber and Mechatronics Tech (NSF, TAACCCT) (Columbia)

10:00–10:30 A.M.
Refreshment Break / View Exhibits
*Prize Drawing 10:15 (Lower Level 2)

10:30–11:15 A.M.
8A Internet of Things and Network Security (Oregon A)
8B How Can Academia and EMC Partner (Oregon BC)
8C Evaluation: Don’t Submit Without It (Oregon D)
8D Successful Student Recruiting Strategies (Pearl)
8E User Access Model (Mt. Hood)
8F Virtual Reality in Technological Ed (Belmont/Laurelhurst)
8G Workforce Dev in Adv Mfg (NSF, TAACCCT) (Columbia)

11:30 A.M.–12:15 P.M.
9A Regional NetLabs+ Virtual Lab Environment (Oregon A)
9B Easing Rocky Road to IT Bachelor’s Degree (Oregon BC)
9C Designing ATE Programs for ALL Students (Oregon D)
9D Hybrid/Electric and Electric Vehicle Tech Ed (Pearl)
9E The Biotechnology Student (Eugene)
9F SEMI High Tech U Provides Unique Model (Mt. Hood)
9G Rethinking Robots in Technical Ed (Belmont/Laurelhurst)
9H Tech Training and Prof Dev (NSF, TAACCCT) (Columbia)

12:30–1:30 P.M.
Keynote Luncheon (Oregon Ballroom)

1:45–2:30 P.M.
10A Enhancing the Cybersecurity Workforce (Oregon A)
10B The Living Lab: Experiential Learning Lab (Oregon BC)
10C Are Your Students Prepared for Work? (Oregon D)
10D Multi-State Student Recruitment (Pearl)
10E Sustainable nanoMAterials Laboratory (Eugene)
10F Gender Equity in the Classroom (Mt. Hood)
10G 3-Rs of Success (NSF, TAACCCT) (Columbia)

2:30–2:45 P.M.
Refreshment Break (Oregon Ballroom Foyer)

2:45–3:30 P.M.
11A Health IT Industry Certification (Oregon A)
11B Project Automate! (Oregon BC)
11C Managing Internal-External Communication (Oregon D)
11D Lasers in Spectroscopy (Pearl)
11E Open Entry/Open Exit Eng Tech AS Program (Eugene)
11F Pipeline Development thru Adv Mfg (Mt. Hood)
11G Universal Design (NSF, TAACCCT) (Columbia)

3:45–4:30 P.M.
12A Integrating Math/Physics in Comp Network (Oregon A)
12B Strong Work Ethic (Oregon BC)
12C Ingraining Fundamental Physics (Oregon D)
12D Where Are the Women? (Pearl)
12E A Mobile Approach to Adv Mfg and STEM (Eugene)
12F Business Analytics Degree (NSF, TAACCCT) (Columbia)

*Must be present to win prize drawings.
International Year of Light (IYL): A Student Recruitment Opportunity

UNESCO has designated 2015 as the IYL—to be celebrated at over 1000 events worldwide. Photonics (optics and lasers) is an enabling technology that is being usefully infused to improve biotechnology, medicine, nanotechnology, digital communications and manufacturing, alternative energy, environmental management, defense and aerospace. Spectacular demonstrations of optics and lasers are a proven tool to create scientific interest and career exploration for youth (K-12) and adults. IYL phenomena will be shown, along with descriptions of events proven to “ENLIGHTEN” students, parents and community leaders.

Moderator: Dan Hull, PI, OP-TEC, Waco, TX. Presenter: Desiré Whitmore, Science Curriculum Specialist, Learning Design Group at the Lawrence Hall of Science, University of California Berkeley

Getting Back to Basics: An Introduction to the Windows Command Line Interface

Many Windows users avoid using the “DOS prompt” at all costs. However, knowing how to use the command line interface (CLI) is an in-demand IT skill your students should have. Facility with the CLI is the precursor skill for managing many hardware interfaces, as well as a springboard into systems administration via Microsoft PowerShell. This presentation covers optimizing the CLI for ease of use, learning command syntax, using keyboard shortcuts, and writing a simple batch program. Navigation aids and other resources will be provided to help you introduce this topic into your IT curriculum.

David Pope, Ozarks Technical Community College, Springfield, MO

Creating Sustainable Change in ICT Education and Workforce Development in California

The California community college, workforce development, and K-12 systems are the largest of their kinds in the country. One of every four community college students in the U.S. attends a California community college. This session will describe significant, sustained changes in each of these systems in information and communication technologies (ICT) education and workforce development. It will also describe the strategies, efforts, and activities of an NSF ATE center in advocating for and motivating many of those changes.

James Jones, Olivia Herriford, Pierre Thiry, Mid-Pacific ICT Center (MPICT), San Francisco, CA

Leveraging Partnerships for Increased Impact

The presenters will demonstrate several ways that K-12 educators, industry partners, and non-profit agencies collaborate to decrease costs and increase impact for grant-related activities such as marketing, recruiting students and professional development. Best practices will be presented and discussed, and helpful techniques for cultivating additional partnerships will be shared.

Susan Ely, Aaron Baute, Ivy Tech Community College, Lafayette, IN
Making Lasers Safe in Educational Labs
Lasers are an enabling technology. Almost all technology programs, not only in Photonics, incorporate lasers for various applications and research. Besides lasers being used for teaching and research in colleges and universities, they are also used in technologies for welding, cutting metals, material processing, laser surgery, laser assisted additive manufacturing, communications and many others. Many laser laboratories at colleges are disorganized and may be unsafe. Laser equipment, protective gear, electrical power and water lines, and student desks are often in disarray, leading to confusion and sometimes accidents. More class 2, 3 and 4 lasers are used in universities, colleges and technical schools than any other application area. Participants will receive guidelines and suggestions for safe laser labs based on experience—and the ANSI Z-136.5 Laser Safety Standards in Educational Institutions.

Fred Seeber, Camden County College, Blackwood, NJ

In Minnesota, only 2 percent of high school students express an interest in manufacturing careers while Minnesota manufacturing businesses post 27,000 manufacturing job openings every four months. During this session attendees will learn about how the nationally organized Dream It. Do It. recruitment strategy is being utilized in Minnesota by the 360 Manufacturing and Applied Engineering ATE Regional Center of Excellence. Strategies and resources will be described and shared to help others consider how they present manufacturing as a career of choice. Best practices from across the national Dream It. Do It. network will be shared.

Jaimee Meyer, Jessica Gehrke, 360 Manufacturing and Applied Engineering ATE Regional Center of Excellence, Bemidji, MN

STEAM: Bridging Art and Computer Science Through Game Education
Participation in paired game development courses enables students to work on team projects in which they complete art and programming tasks that simulate real-world work experiences.

Mary Rasley, Steven Weitz, Lehigh Carbon Community College, Schnecksville, PA

How to Increase Student Retention and Career Placement Through a 21st-Century High-Tech Education
Our model of technical education adapted to high-tech ecosystems across the U.S. will accelerate workforce training for 100,000 hard-to-fill jobs and prepare 21st-century workforce pre-adapted for disruptive innovations in the IOT era. We will share how we use an innovative curriculum for teaching fundamental concepts in automated data acquisition, motion control and machine-vision, robotics, process control, and quality monitoring to prepare students for high-tech employment. Learn the key factors contributing to 75% student retention, 90% of graduate employment, and success in facilitating learning of mathematics and physics through use of “Visual Apps” designed using Excel and LabVIEW.

Sam (Prashanta) Samanta, Finger Lakes Community College, Victor, NY; Carl Nybro, National Instruments, Austin, TX
Cybersecurity and Healthcare Information Technology
Maintaining effective cyber defense is as essential to healthcare providers as hand washing. Malware and cyber security incidents can cause network underperformance, increased cost due to maintenance, and lack of responsiveness from critical computing infrastructure at critical times. Far worse, breaches in cyber security can cause millions of dollars in fines, bad publicity, and loss of trust with patients.

Robin Saunders, River Valley Community College, Claremont, NH

Build-Your-Own Recruitment Video: ATETV Customization Project Development Session
The SC ATE National Center for Expanding Excellence in Technician Education (creators of TeachingTechnicians.org) and Pellet Productions, Inc. (creators of ATETV.org), are developing a customizable online tool that will help educators stimulate career interest and recruit students into technician education programs. Participants will see a demo of the user interface for building their own locally specific videos and can register to be beta testers.

Anthony Manupelli, Pellet Productions, Inc., Reading, MA; Elaine Craft, SC ATE Center of Excellence, Florence, SC

Challenges and Successes in a Fully “Flipped” Developmental Math Course
The flipped classroom model has been proposed as a panacea that can meet the needs of every student. For two semesters we taught a beginning algebra course using the flipped model of instruction exclusively. We will share with participants the successes and the unexpected challenges of using this approach with students who have struggled with mathematics.

Keith Mousley, Gary Blatto-Vallee, DeafTEC, Rochester, NY

Development of Nuclear Power Training Programs in Texas Offering the Nuclear Uniform Curriculum
Educational programs were developed at community colleges in southeast Texas in 2007 to meet the anticipated manpower needs of the nuclear power industry in the area. The formation of a nuclear educational coalition brought together stakeholders and resulted in communitywide consensus and development of crucial linkages among education, industry, civic, and economic development partners. The training programs currently offer one-year certificates in mechatronics fields and two-year associate degrees in nuclear technology-related fields. Curricula are based on the Institute of Nuclear Power Operations (INPO) Uniform Curriculum Guide. This presentation will examine these programs and the use of state-of-the-art instructional equipment and computer-based simulators for “hands-on” training.

Bruce Kieler, Wharton County Junior College, Wharton, TX

Unpacking Competencies
Competencies provide performance indicators for technicians in today’s technological environment. The Technician Education in Additive Manufacturing (T.E.A.M.) competencies, developed by a consortium of education and industry professionals, have 12 categories, 25 concentrations, and 147 performance indicators. There’s a lot of “stuff” in competencies. If you can “unpack” these competencies, it is easier to determine the content and experiences they require. Perhaps more importantly, the technique and insight into competency-based curriculum provided can help instructors uncover the student-centric concepts that ignite interest and are relevant to the workplace.

Kim Grady, Mel Cossette, National Resource Center for Materials Technology Education (MatEdU), Lynnwood, WA
Using Biomedical Platform to Introduce Females to Micro- and Nanotechnologies

Leveraging female high school students’ interest in medical-related courses, NDSCS has launched a pilot project using biomedical technology to cover micro- and nanotechnologies. Data including changes in students’ interest and attitudes towards high-tech manufacturing careers from the pilot project will be presented, along with the hands-on experiments used to convey the technologies that have enabled the biomedical field. Session will also cover the partnerships established between a high school CTE center, two-year and four-year colleges.

Kristi Jean, Rick Hendrickson, North Dakota State College of Science, Wahpeton, ND

New STEM OER with Evidence-Based Strategies Boost Student Success: Cyber and Mechatronics Technology (NSF and TAACCCT)

The National STEM Consortium has developed new certificate programs in composite materials technology, cyber technology, electric vehicle technology, environmental technology, and mechatronics. This session will provide attendees with an overview of the 30-credit cyber and mechatronics certificates, complete with program guides, curricula, instructor toolkits, and a contextualized STEM bridge. These programs, designed using evidenced-based educational strategies that accelerate and reinforce STEM learning, are available online as open educational resources. If your school is contemplating creating or updating a cyber or mechatronics program, this session will help kick-start that process.

Susan Gallagher, Kelly Koermer, Anne Arundel Community College, Arnold, MD; Gary Morgan, College of Lake County, Grayslake, IL; Linda Austin, Ernie Friend, Florida State College, Jacksonville, FL
With the Internet of Things, Network Security Is Everything!
Here we go again! The way we access the Internet has changed rapidly over the past decade, transitioning from desktop computers hardwired to our networks to wireless mobile devices that fit in your hand. Now the connection to the Internet is expanding again, this time connecting everyday devices in our homes and businesses—TVs, appliances, doors/windows, and heating and air conditioning units, for example. It has become more important than ever to secure our networks and devices. This session will introduce the technologies, products, standards, and methodologies that must be deployed and implemented to protect our homes, businesses, and critical infrastructure. The presenters will also share access to a free online virtual labs library available through the CSSIA center.

Bill Wolfe, Justin Valentino, CSSIA, Palos Hills, IL

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, NDG will present and demo 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 in the EMC Academic Alliance program.

Kim Yohannan, EMC Corporation, Franklin, MA; Rich Weeks, Network Development Group (NDG), Research Triangle Park, NC

Evaluation: Don’t Submit Your Proposal Without It
A strong evaluation plan that is well integrated into your grant proposal will strengthen your submission and maybe even give you a competitive edge. In this session we’ll provide insights on ways to enhance your proposal and avoid common pitfalls with regard to evaluation. We’ll walk through EvaluATE’s Evaluation Planning Checklist for ATE Proposals, which provides detailed guidance on how to address evaluation throughout a proposal, from the project summary to the budget justification. We’ll share examples of how to incorporate results from previous evaluations in the Results of Prior NSF Support section, present a coherent evaluation plan linked to project activities and goals, and budget for an external evaluation (among other things).

Emma Perk, Corey Smith, EvaluATE, Kalamazoo, MI

Creating Successful Student Recruiting Strategies
U.S. employers need over 800 new photonics techs each year. Thirty-five colleges are only producing 300 completers. A recent study of 149 first-year students revealed that many became interested in the field and chose photonics as a career because of what they saw and learned from college recruiters, the Internet and social media. Sixteen colleges have received grants to increase student enrollment in photonics. The recruiters meet regularly to share resources and best practices, and to plan new strategies and elements for recruiting both youth and returning adults. Participants will see demonstrations and discuss useful recruitment and focused delivery tools.

Dan Hull, Gordon Snyder, OP-TEC, Waco, TX; Carolyn Hulla-Meyer, Cincinnati State Technical and Community College
10:30–11:15 A.M. Sessions (continued)

8E Mt. Hood (Level 2)

User Access Model: Leveraging Equipment Resources for Sustainability and Student/Industry Partnerships

Your technical education program probably uses specialized equipment for technician training. Often this equipment is expensive, but underutilized. Learn how to leverage your equipment resources to increase student/industry partnerships and program sustainability. In this session you will learn how SHINE created a user facility model that allows companies to rent equipment time in the SHINE Nanotechnology Lab. We will show how SHINE’s pricing structure encourages student/industry collaborations and increases industry/Center partnerships while increasing our Center’s sustainability. You will leave this session with sample documents (contracts, IP agreements, and liability forms) that can be used to set up your own user facility.

Peter Kazarinoff, Brian Rucci, Kristine Schroeder, SHINE, Seattle, WA

8G Columbia (Lobby Level)

Workforce Development in Advanced Manufacturing—A Progress Report on a USDOL Project (NSF and TAACCCT)

The United States Department of Labor (USDOL) has funded Purdue University Calumet to implement a project titled AWAKE—Assisting Workforce by Advancing Knowledge for Employment. The project provides knowledge and skills at no cost to a participant to begin a new career in advanced manufacturing. Training is available at no cost for workers who have lost their jobs or are threatened with job loss as a result of foreign trade, veterans, and underemployed or unemployed citizens. During the 21-week program, participants have the opportunity to obtain industry-recognized certifications. Five cohorts have completed the training. This session will present 20-month progress reports on the project.

Niaz Latif, College of Technology, Purdue University Calumet, Hammond, IN

8F Belmont/Laurelhurst (Level 2)

Virtual Reality in Technological Education: The Ultimate Educational Technology

This session will showcase digital learning solutions developed by the Center for Aviation and Automotive Technology Education using Virtual E-Schools (CA2VES)—high-impact, hands-on virtual reality and 3D visualizations focusing on engaging, computer-enhanced teaching techniques and hands-on laboratory experiences designed to create student-centered, contextual, authentic learning experiences. Participants will experience a variety of virtual reality tools, learn about how virtual reality is being incorporated into technological education curriculum nationwide, and engage in reflective activities that encourage them to consider use of curriculum tools and virtual reality in K-12 classrooms as exposure and recruitment tools.

Kris Frady, Center for Aviation and Automotive Technology Education Using Virtual E-Schools (CA2VES), Clemson, SC
Sessions • 11:30 A.M.–12:15 P.M.

9A Oregon Ballroom, Salon A (Lower Level 1)

Development of a Regional NetLabs+ Virtual Lab Environment Shared by Multiple Colleges

This session will detail the steps taken in the planning and implementation of regional NetLabs+ virtual lab environments designed to provide 24/7 student access from any Internet-accessible location. While generally implemented as a single college solution, this approach was designed to meet the needs of multiple colleges. Operational issues (e.g., scheduling and costs) and project sustainability will be discussed.

Steve Linthicum, California Community College Chancellor’s Office/Sierra College, Rocklin, CA; Richard Grotegut, Ohlone College, Fremont, CA

9B Oregon Ballroom, Salon BC (Lower Level 1)

Easing the Rocky Road to an IT Bachelor’s Degree

What does it take to create an IT bachelor’s degree that meets industry needs, satisfies accreditation requirements, and accepts a majority of transfer credits from associate degree or certificate programs? How can students benefit from such a program regardless of geographical location? Find out in this session!

David Keathly, National Convergence Technology Center, Denton, TX

9C Oregon Ballroom, Salon D (Lower Level 1)

Lessons Learned about Designing ATE Programs for ALL Students

ATE programs have designed innovative curriculum and pedagogy to expand access and success for underprepared [remedial] students. Many ATE instructors are adapting programs, but may not be getting the recognition they deserve. Learn how ATE instructors have shaped content and teaching methods, what their hurrahs and challenges have been, and how to publicize your own efforts so others can learn from you.

Norena Norton Badway, Andrea Goldfien, Arminheh Noravian, Angela Wall, Courtney Rudd, Pathways into and through ATE Targeted Research, San Francisco State University, San Francisco, CA

9D Pearl (Level 2)

Hybrid/Electric and Electric Vehicle Technology Education: Setting the Standard

NEVTEX, a Central Oregon Community College program, prepares technicians to work in advanced hybrid electric vehicle and electric vehicle (HEV/EV) diagnostics, maintenance, and repair. Presenters will demonstrate advanced testing on HEV electric machines with an All Test Pro-33 and a Fluke Meter 1587 on a Gen II Prius Transmission; discuss educational design and implementation strategies, including the concept of “open badging,” with a sample of open badging available to participants; and share how regional educational and industry partners have formed an educational consortium to prepare colleges to address the growing technician readiness gap in this emerging field.

Ken Mays, Bruce Emerson, Central Oregon Community College, Bend, OR

9E Eugene (Lower Level 1)

The Biotechnology Student: From Remediation to Employment

The presenters describe the impact of the Life Science Lab Assistant (LSLA) Program in alleviating reading and math deficiencies among biotechnology students. The LSLA program curriculum will be reviewed as well as that of the highly successful Biotechnology program. Also highlighted will be the advanced topics courses (a requirement of the Biotechnology degree) that provide cutting-edge training on technology used in the industry. Finally, internships (also a requirement of the Biotechnology degree) provided through the BioBench Contract Research Organization (CRO) or with one of the many local area industry partners along with the positive impact of these for all involved, will be discussed. Both of these programs work in a very synergistic way with the CRO and the local industry which results in high employment rates for these graduates.

Elizabeth Boedeker, Scott Gevaert, St. Louis Community College, Center for Plant and Life Sciences, St. Louis, MO
9F Mt. Hood (Level 2)

SEMI High Tech U: A Model of Partnerships Between Industry, Community Colleges, and High Schools

SEMI High Tech U is a unique, STEM-focused, career exploration program for high school students featuring hands-on activities in nanotechnology and microtechnology. During High Tech U, students spend three days at industry and college sites learning how STEM-related skills have relevance in the workplace. Utilizing hands-on curriculum taught by industry professionals, students see how STEM skills apply within career goals and how colleges can provide the education required to achieve those goals. Attendees of this session learn how HTU develops a solid partnership between community colleges and high schools that paves educational pathways, builds college enrollment and develops a long-term pipeline of STEM field employees.

Leslie Tugman, SEMI Foundation, Happy Valley, OR; Dorina Cornea-Hasegan, Portland Community College, Rock Creek, OR; Damon Heer, FEI Corporation, Hillsboro, OR

9G Belmont/Laurelhurst (Level 2)

Rethinking How Robots Can Be Used in Technical Education and Student Recruiting

This hands-on session will showcase an entirely new type of interactive robot that is redefining robotics in manufacturing and is an effective recruiting tool. The latest robots perform a variety of repetitive production tasks, all while safely and intelligently working next to people—without cages! These robots exhibit behavior-based common sense and are capable of sensing and adapting to their tasks and environments. They require no complex programming or costly integration.

Ernie Friend, Linda Austin, Florida State College, Jacksonville, FL; Mandy Dwight, Thomas Munger, Rethink Robotics, Inc., Boston, MA

9H Columbia (Lobby Level)

Combining High Impact Technology Training and Professional Development—A TAACCCT Case Study (NSF and TAACCCT)

The session will present best practices from the NISGTC TAACCCT program at Moraine Valley Community College. The faculty and staff at Moraine Valley Community College received a round I TAACCCT award. This team will share some of the best practices in preparing students both academically and professionally for high-wage high-growth specializations in Information Technology. The session will include information regarding stackable certificates, use of virtual teaching and learning environments, certification preparation programs and the employment engagement process. The session will also highlight student tracking systems which proved to be very valuable in tracking student success.

Dave Termunde, Angela O’Donnell, John Sands, CSSIA, Palos Hills, IL
Keynote Luncheon
Thursday, 12:30–1:30 P.M., Oregon Ballroom, Salons E–I

Param Jaggi
CEO, Ecoviate

Superpowers and Sustainability
The general landscape of entrepreneurship has drastically changed over the past 5 years. With the introduction of data-science, rapid prototyping, artificial intelligence, and many other revolutionary technologies, there is a greater need than ever to use these ‘powers’ to ensure sustainability of the planet. This talk will discuss the intersection of entrepreneurship, technology, and environmental sustainability and what it means for the next generation of leaders.

Param Jaggi is the 20-year-old founder & CEO of Ecoviate, a research and development company focusing on redefining consumable sustainability. Since the age of 13, he has innovated bio-fuel preparation, designed highly effective bioreactors, created a device that mitigates motor vehicle emissions (currently patented), and many more. Param was named to the 2012 and 2013 Forbes “30 Under 30: Energy” list for his work in green-technologies. Aside from dropping out of Vanderbilt University at the age of 19, studying Mechanical Engineering and Economics, Param also serves as a board member to the USASEF (USA Science and Engineering Festival) and Spark Clean Energy to facilitate STEM education around the country.
Sessions • 1:45–2:30 P.M.

10A Oregon Ballroom, Salon A (Lower Level 1)

**Enhancing the Cybersecurity Workforce Through Education and Industry Certification**

Learn how to link into (ISC)²® certifications and educational material through the Global Academic Program (GAP) to meet the academic needs of the next generation of cybersecurity professionals. Globally recognized as the Gold Standard, (ISC)²® issues credentials to qualifying candidates, such as the:
- Certified Information Systems Security Professional (CISSP®),
- Certified Secure Software Lifecycle Professional (CSSLP®), and
- HealthCare Information Security and Privacy Practitioner (HCISPP®). This presentation will also demonstrate how the (ISC)²® SSCP® industry certification and Common Body of Knowledge (CBK) maps to the CAE IA Knowledge Units.

Jo Portillo, (ISC)²®, Clearwater, FL; John Sands, CSSIA, Palos Hills, IL

10B Oregon Ballroom, Salon BC (Lower Level 1)

**The Living Lab: How to Implement an Experiential Learning Laboratory**

The Living Lab is an experiential learning environment in which students are immersed in a real-world IT business. They perform all IT functions as they would in a professional job. The Living Lab allows students to apply networking, security, database, website, and application development concepts and techniques learned from prior CIT courses to service internal and/or external projects. The Living Lab emulates an industry IT department in which students work on one or more projects as part of an IT team. In this session participants will be introduced to the experiential learning laboratory and perform exercises designed to help them ignite their programs.

Connie Justice, Vicky Smith, Purdue School of Engineering and Technology, IUPUI, Indianapolis, IN

10C Oregon Ballroom, Salon D (Lower Level 1)

**Are Your Students Prepared for the Workplace?**

How can you make sure your students are ready for their first internships? Broadening Advanced Technological Education Connections (BATEC) has increased the percentage of students securing internships in partner schools. This session will focus on two components of this process: student preparation and the introduction of students to employers through speed networking. Likened to speed dating, speed networking is a high-intensity, lightening-round, meet-and-greet method of connecting students to prospective employers for internship opportunities, full- and part-time job opportunities, interview and resume preparedness, and more.

Lou Piazza, Deborah Boisvert, Simon Haile, BATEC, Boston, MA

10D Pearl (Level 2)

**A Multi-State Student Recruitment Partnership Between Indian Hills Community College and the Columbia Area Career Center**

Indian Hills Community College in Ottumwa, IA, and the Columbia Area Career Center in Columbia, MO, have created a unique partnership that allows high school students to explore career and educational opportunities in the field of photonics. IHCC hosts CACC students annually for an overnight stay and exposure to the college experience. CACC students work with IHCC students on laboratory activities, tour the IHCC campus, learn about opportunities within the laser club, and share meals with college students majoring in lasers and optics. Participants will learn how this activity benefits both educational institutions and employers that need laser technicians.

Greg Kepner, Frank Reed, Indian Hills Community College and Midwest Photonics Education Center, Ottumwa, IA; Sharon Nelson, Columbia Area Career Center, Columbia, MO
1:45–2:30 P.M. Sessions (continued)

10E Eugene (Lower Level 1)

**Sustainable nanoMAterials Laboratory (SMAL): A Research-Based Laboratory Module for Undergraduates**

The SMAL module brings nanoscience research to laboratory classes for first- and second-year science and engineering undergraduates. Students investigate the toxicity of silver nanoparticles and consider the possible effects of these particles on human health and the environment. While building upon foundational principles common to chemistry, biology, and materials engineering, students also contribute meaningfully to a large-scale, ongoing research project in nanotoxicity. Long-term goals include coordinated efforts across classrooms that culminate in the publication of research results. Presenters will introduce the SMAL module, give tips on adapting it in the classroom, and guide participants through this three-week chemistry curriculum.

_Catherine Nameth, UCLA, Los Angeles, CA; Korin Wheeler, Santa Clara University, Santa Clara, CA_

10G Columbia (Lobby Level)

**Community Colleges and the 3-Rs of Success: Recruiting, Retaining, and Graduating Underserved Students (NSF and TAACCCT)**

Recently, President Obama challenged community colleges to increase the number of underserved students completing Associate degree programs. However, with the challenges that most underserved and underprepared students face, attending college may seem like just another impossible dream. Across the nation community colleges seem to be grasping for solutions to recruit, retain, and graduate those who most desperately need the training and opportunities for which community colleges have been known for over 100 years. This session will highlight what some community colleges are doing to accomplish the President’s mandate. Additionally, audience members will have an opportunity to share their experiences as well.

_Allan Levandowski, College of Lake County, Grayslake, IL_

10F Mt. Hood (Level 2)

**Gender Equity in the Classroom**

We need to increase female enrollment in our STEM programs, and a lot of effort is spent recruiting females. But what happens when students get in the classroom? This interactive workshop will share tips and ideas on ways to ensure that your classroom is invitational to all students. Information on gender equity workshops and development of problem-based learning activities that appeal to all students will be shared.

_Pamela Silvers, Steven Marcus, Jim Sullivan,
Asheville-Buncombe Technical Community College,
Asheville, NC_
Health IT Industry Certification: Free Online Stanford Open Learning Initiative Course and Faculty Resources

IT jobs in the healthcare sector are increasing as national health reform takes root. Community colleges faced with entry barriers in this rapid-expansion field require high-quality resources to launch and grow relevant programs. NSF, Gates Foundation, and DOL support resulted in a just-completed two-year collaboration between Bellevue College, Stanford University Open Learning Institute, and St. Louis Community College. An exceptional Introduction to Health Information Technology online course is now freely available; content is activity-rich, preparing learners for a Health IT industry certification. Additional HIT instructional resources include interactive electronic medical record simulations and HIT certificate program content.

Patricia Dombrowski, Margaret Murphy, Bellevue College, Bellevue, WA

Project Automate! A Creative Approach to Bridging the IT Skills Gap

The demand for skilled workers in IT and in IT-enabled professions continues to expand beyond the available supply. The current pipeline by itself is not a sufficient solution. The Automate Project seeks to broaden the population of individuals who succeed in IT and in IT-enabled professions by teaching IT via building automation system (BAS) tools and processes. The presenters will overview the project to date, including a report on the initial pilot work, and will seek feedback and input from participants. Participant feedback will help inform development and rollout of the project.

Tom Pensabene, Robert Nirenberg, Metropolitan Community College, Omaha, NE

Managing Internal and External Communication for Projects and Consortia

Clear and effective communication is a key part of any educational grant consortium. Knowing your stakeholders and their values allows you to choose the appropriate descriptors, media, and timing. Internal audiences are crucial to effective management. External audiences form your base of participants, funders, and community support. This presentation will focus on four topics: identifying your stakeholders and their values, collecting data and using it to manage partners, managing internal communication, and outreach to external audiences. Since 2006 the Center for Economic and Workforce Development at Kingsborough Community College has managed over $14 million in program grants, including two TAACCCT grants.

Edgar Troudt, Jessica Cinelli, Center for Economic and Workforce Development, Brooklyn, NY

Lasers in Spectroscopy

Growth in the development of new laser types and applications during the last ten years has been near exponential. One of the latest applications is spectroscopy. This session will cover laser applications for depth sensitivity using Raman Spectroscopy in optical coherence tomography (OCT). Curriculum development in this area is underway at Central Carolina Community College. LASER-TEC, along with OP-TEC, developed curriculum materials that will allow the addition of a course or a chapter on lasers to any technology field. A question and answer session will follow.

Gary Beasley, Central Carolina Community College, Lillington, NC
2:45–3:30 P.M. Sessions (continued)

**11E Eugene (Lower Level 1)**

**Developing Open Entry/Open Exit Competency-Based Engineering Technology AS Degree Program**

Polk State College has transitioned a former traditional lecture/lab semester-based Engineering Technology Associate degree program into a hybrid competency-based Open-Entry/Open-Exit (OEOE) format. This exciting new opportunity provides a modular (1 credit), non-term, self-paced, open-lab, faculty-mentored format that is accessible to all learners. Our presenters will discuss motives for making the change, the benefits of adopting this format, and will present a progress update on this transition. Lessons learned, student feedback, and a discussion of the enablers and barriers experienced during implementation will be explored.

**Eric Roe, Terry Bartelt, Robert Frank, Jonathan Little, Lara Sharp, Polk State College, Bartow, FL**

**11G Columbia (Lobby Level)**

**Universal Design for Learning: A Framework for Addressing Learner Diversity (NSF and TAACCCT)**

Educators designing ATE programs are responsible for ensuring the success of all students including those with physical, sensory, and learning disabilities, differing cultural and linguistic backgrounds, and various motivations for learning. Universal design for learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn. This session provides an overview of UDL with examples from open educational resources (OER) development in TAACCCT programs demonstrating how grantees met their Department of Labor TAACCCT requirement for accessibility and UDL. We will showcase UDLoncampus.cast.org, a collection of resources on UDL for postsecondary stakeholders to help them provide flexibility in instructional materials, teaching methods, and assessments.

**Sam Johnston, CAST, Wakefield, MA**

**11F Mt. Hood (Level 2)**

**Pipeline Development of a Skilled Workforce Through Advanced Manufacturing**

Future economic growth and prosperity depends on an aligned education system that helps all students to become innovators and inventors. This panel session will share the structure of a consortium-based approach designed to establish a process for a workforce pipeline in advanced manufacturing. It will also outline the three key aspects of this process: skill building, outreach, and education and research. Outreach activities focus on new ways for K-12 students to improve their visualization and innovation. The research and education activities include advanced manufacturing skill building for postsecondary students. Examples of activities will be demonstrated and initial results shared.

**Sameer Hamoush, Shou-Yuh Chang, North Carolina A&T State University, Greensboro, NC; Kevin Baughn, Kansas City Plant, Kansas City, MO; Mostafa Elaasar, Southern University, New Orleans, LA; Donna Stallings, Lincoln University, Jefferson City, MO**
Integrating Math and Physics Into a Narrowly Focused Computer Networking Course Sequence

Modules were developed and piloted for the integration of more math and physics into a (Cisco Academy) computer networking course sequence that was narrowly focused on obtaining industry certification. This session will provide a summary of the pilot results.

John Spurlin, Norfolk State University, Norfolk, VA

Strong Work Ethic—The Key to Student Success In and Out of the Classroom

Career and technical educators have led the nation in teaching the vocational skills that students need to get hired. But it’s what we aren’t teaching that may end up getting them fired. Nearly half of all new employees are fired within 18 months because of poor work ethic. See how teachers are developing these critical behaviors.

Josh Davies, The Center for Work Ethic Development, Denver, CO

Confronting a Persistent Teaching/Learning Challenge and Ingraining Fundamental Physics Understanding

This session will include a demonstration of a persistent challenge confronting technical educators. Measuring electrical current is required of anybody who works with electrical circuits. This skill requires students to apply fundamental physics concepts without damaging test equipment—easier said than done.

Philip Williams, Idaho State University, Pocatello, ID

Where Are the Women?—Trends in Transition Rates from High School Physics to Engineering Education

While increasing numbers of young women complete physics in high school, they continue to choose postsecondary programs that are not engineering. Why? Sex discrimination continues in science classrooms, influencing the career choices of our youth. This session will focus on the trends in physics participation over the last 100 years and how perceptions of gendered careers have influenced curriculum design.

Katherina Tarnai-Lokhorst, Royal Roads University, Victoria, Canada

A Mobile Approach to Advanced Manufacturing and STEM Applications

Advanced manufacturing is being brought to rural high schools in Wisconsin as part of the Advanced Manufacturing through Applied STEM Education (AMASE) grant. This NSF ATE project addresses the manufacturing skills gap across the state, particularly in rural populations in the Chippewa Valley Technical College (CVTC) district. A mobile manufacturing laboratory is being paired with directed professional development opportunities.

Shamus Funk, Advancing Manufacturing Through Applied STEM Education (AMASE), Eau Claire, WI

Practical Insights in Implementing the Only Two-Year Business Analytics Associate Degree (NSF and TAACCCT)

The Associate in Applied Science degree in Business Analytics was launched under funding through the DOL TAACCCT program in Round 2 (2012). The presenters will share lessons learned in developing a new AAS degree in analytics, as well as best practices in fostering student progression and completion through strategies implemented in the program. The presentation will highlight struggles, solutions, and insights learned in both developing the only two-year undergraduate program in analytics in the country while in tandem meeting grant deliverables and expectations.

Tanya Scott, Walter Martin, Wake Technical Community College, Raleigh, NC
Exhibitors

Booth 114
360 Manufacturing and Applied Engineering ATE Regional Center of Excellence
1500 Birchmont Drive NE, #34
Bemidji, MN 56601
www.360mn.org

360 is a consortium of 15 colleges led by Bemidji State University that serves advanced manufacturing by enhancing the pipeline of workers and offering flexible educational opportunities.

Booth 104
Amatrol
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 204
American Technical Publishers
10100 Orland Parkway, Suite 200
Orland Park, IL 60467
www.atplearning.com

American Technical Publishers publishes printed and digital learning resources that are supported by comprehensive instructor resource materials. ATP also provides customization of products and services to meet your specific program needs.

Booth 107
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 305
ATE Central
1210 W. Dayton Street
Madison, WI 53706
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 116
Ball State University: Technology Graduate Programs
BC 220L
Muncie, IN 47306
www.bsu.edu/online

Ball State’s all-online master’s degrees in career and technical education and technology education prepare you for advancement in many educational settings or in other fields.

Booth 413
BATEC: Broadening Advanced Technological Education Connections UMass Boston
100 Morrissy Bouladvard
Boston, MA 02125
www.batec.org

National Center of Excellence Computing and Information Technology.

Booth 205
Bellevue College
3000 Landerholm Circle SE
Bellevue, WA 98007
www.bellevuecollege.edu

The Health eWorkforce Consortium: Newly developed, free Health IT curricular resources including an online intro course co-developed with Stanford University Open Learning Institute.

Booth 506
Bio-Link/City College of San Francisco
1855 Folsom Street, Suite 643
San Francisco, CA 94502
www.bio-link.org

The Next Generation National ATE Center for Biotechnology and Life Sciences 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 115
c3bc: National Center Biotechnology Workforce
2100 Silas Creek Parkway
Winston-Salem, NC 27103
www.biotechworkforce.org

The NCBW leads the c3bc US DOL TAACCCT and NSF ATE Biosciences Industrial Fellows Grant.

Booth 614
CA2VES: Center for Aviation and Automotive Technology Education using Virtual E-Schools
110 Freeman Hall
Clemson, SC 29634
www.clemson.edu/ca2ves

The Center for Aviation and Automotive Technology Education using Virtual E-Schools (CA2VES) develops virtual reality and digital learning tools to advance technological education to support workforce preparedness and economic development.

Booth 210
CARCAM: Consortium for Alabama Regional Center for Automotive Manufacturing
P.O. Box 227
Gadsden, AL 35902
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 110
Clark College Cisco Academy Support Center
1933 Fort Vancouver Way
Vancouver, WA 98663
www.teachNW.com

Assisting educators and educational institutions in offering Cisco network technology courses. Helping institutions start up new Cisco educational programs: Programming, UNIX/Linux OS, computer network engineering, customer support, PC repair, etc.
Booth 206
CORD: Center for Occupational Research and Development
P0 Box 21689
Waco, TX 76702
cord.org
The Center for Occupational Research and Development (CORD) is a nonprofit educational organization with 30 years experience supporting community colleges across the country. Stop by and learn more about our curriculum design services in STEM and technical fields, our customized faculty development programs, and technical assistance for both adult and traditional career pathways programs.

Booth 405
CTC: National Convergence Technology Center
9700 Wade Blvd. #J130
Frisco, TX 75071
www.connectededtech.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 213
Cypress
198 Champion Court
San Jose, CA 95134
cypress.com/cua
Cypress Semiconductor Corporation invites university professors and students who are specializing in electrical engineering or computer science to join the Cypress University Alliance (CUA).

Booth 112
DeafTEC: Technological Education Center for Deaf and Hard-of-Hearing Students
52 Lomb Memorial Drive
Rochester, NY 14623
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 702
Edibon-USA, LLC
10 Glen Lake Parkway Suite 130-95
Atlanta, GA 30328
www.edibon.com
Edibon designs and manufactures Hi-Tech Trainers for Colleges, Universities and Vocational with SCADA and PID systems & Labview, Engineering for Physics, Electronics, HVAC, Process Control, Chemical, Mechanical, Renewable Energies, Water Environmental.

Booth 504
EMC Corporation
55 Constitution Blvd.
Franklin, MA 02038
education.emc.com/academicalliance/
EMC is a global leader in enabling business to transform their IT operations and deliver IT as a service.

Booth 607
ETA International
5 Depot Street
Green castle, IN 46135
www.eta-i.org
ETA® International represents electronics professionals with over 80 industry-recognized certifications. ETA certifications, developed by industry experts, confirm both technical knowledge/skills required in today's industry.

Booth 604
EvaluATE
1903 W. Michigan Avenue
Kalamazoo, MI 49008-5237
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 801
Fabicator 3D Printers by K&L Services Group
215 N. 8th Street
Allentown, PA 18102
www.fabicator.com
The Fabicator 3D Printer line is built for industry and education. Manufactured in Allentown, PA, USA.

Booth 708 & 709
Festo Didactic, Inc.
607 Industrial Way
Eatontown, NJ 07724
www.labvolt.com
As the world-leading equipment and solution provider in a broad spectrum of technologies, Festo Didactic is your ideal partner for technical education and industrial training.

Booth 803
FLATE: Florida Advanced Technological Education Center
10414 East Columbus Drive
Tampa, FL 33619
fl-ate.org
Using curriculum, outreach and professional development strategies for program improvement, FLATE, an NSF Center of Excellence, is committed to ensuring that Florida has a well prepared technician workforce for manufacturing.

Booth 605
Hampden Engineering Corporation
99 Shaker Road
East Longmeadow, MA 01028
www.hampden.com
For more than sixty years Hampden Engineering has been a world leader in the manufacturing of quality hands-on training equipment for educational, industrial and military training programs.

Booth 312
International Year of Light
316 Kelly Drive
Waco, TX 76710
light2015.org
International Year of Light (IYL 2015) exhibit features demonstrations of optical phenomena, photonics technician career information, and featured speaker Desire Whitmore.

Booth 106
Jones & Bartlett
5 Wall Street
Burlington, MA 01803
www.issaseries.com
Jones & Bartlett Learning is a world-leading provider of instructional, assessment, and learning-performance management solutions for the secondary education, postsecondary education, and professional markets.

Booth 310
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 407
MATEC NetWorks
4110 E. Wood Street
Phoenix, AZ 85040
www.matecnetworks.org
MATEC NetWorks is an NSF-ATE Resource Center that provides digital learning resources including webinars in the areas of semiconductors, automated manufacturing, electronics and related fields.

Booth 108
MatEdU: National Resource Center for Materials Technology Education
20000 68th Avenue West
Lynnwood, WA 98036
www.materialseducation.org
MatEdU focuses on material science, provides web-based accessible resources and instructional materials, offers professional development, and promotes using core competencies for technicians that handle materials.

Booth 308
MPEC: Midwest Photonics Education Center
525 Grandview Avenue
Ottumwa, IA 52501
www.indianhills.edu
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 113
MPICT: Mid-Pacific ICT Center
50 Phelan Ave, 5107
San Francisco, CA 94112
www.mpiict.org
NSF ATE Center focused on Information and Communication Technologies (ICT).

Booth 105
MTAB USA LLC
2018 156th Avenue NE
Bellevue, WA 98007
www.mtabusa.com
“We provide integrated skill-development solutions in advanced manufacturing technology including full simulators with certification testing, CNC and automation equipment and an engaging curriculum.”

Booth 613
NACK: Nanotechnology Applications and Career Knowledge Network
118 Research West Building
University Park, PA 16802
www.nano4me.org
The Nanotechnology Applications and Career Knowledge (NACK) National Network, headquartered at Penn State, has a multitude of resources and services available for the integration of nanotechnology into existing course work and also for starting up complete nanotechnology undergraduate hands-on programs.

Booth 411
Nano-Link: Center for Nanotechnology Education
1300 145th Street E.
Rosemount, MN 55068
www.nano-link.org
Nano-Link: Center for Nanotechnology Education provides semester-long college courses and labs as well as activity-based modules (used to infuse nano concepts into high schools), creating career path awareness. Nano-Link also trains faculty and supports competency-based curriculum development.

Booth 309
National Council for Geographic Education
1101 14 Street, NW, Suite 350
Washington, DC 20005-5647
www.ncge.org
Integrated Geospatial Education and Technology Training (iGETT) is funded by NSF to support the integration of GIS and remote sensing in geospatial workforce education.

Booth 608
National CyberWatch Center
301 Largo Road
Largo, MD 20774
nationalcyberwatch.org
The role of the National CyberWatch Center is to lead and support collaborative efforts to advance cybersecurity education and strengthen the national cybersecurity workforce.

Booth 706 & 707
National Instruments
11500 N. Mopac Expressway
Austin, TX 78759
www.ni.com
National Instruments is a leading provider of academic solutions for teaching engineering technology courses, using interactive, real-world learning experiences that prepare students for the workforce. For more information about NI academic solutions and discounts.

Booth 612
NBC2: Northeast Biomanufacturing Center and Collaborative
340 Dekalb Pike
Blue Bell, PA 19422
www.biomanufacturing.org
NBC2 offers advice for starting and enhancing programs to support the growth of local bioeconomies, including biomanufacturing curriculum and stories of program and student success.

Booth 109
NEATEC: Northeast Advanced Technology Education Center
80 Vandenbergah Avenue
Troy, NY 12180
www.neatec.org
NEATEC will serve as a critical, sustainable resource to create and maintain a skilled technical workforce for the semiconductor and nanotechnology industries in New York State and Western New England.

Booth 703 & 704
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 306
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 103
PMMI Mechatronics
11911 Freedom Drive, Suite 600
Reston, VA 20190
www.pmmi.org/mechatronics
PMMI develops nationally-recognized certificate tests in the area of mechatronics for industrial maintenance. These 3rd-party credentials are recognized by the National Association of Manufacturers (NAM).
Booth 307
RCNET: Regional Center for Nuclear Education & Training
3209 Virginia Avenue
Fort Pierce, FL 34981
www.gonuke.org
RCNET was established to make sure the demand for skilled nuclear technicians is met in a standardized and systematic way.

Booth 211
RCNGM: Regional Center for Next Generation Manufacturing
61 Woodland Street
Farmington, CT 06105
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 616
Rethink Robotics
27 Wormwood Street
Boston, MA 02210
www.rethinkrobotics.com
Rethink Robotics develops smart, collaborative robots that can operate safely next to people in a wide range of manufacturing, production and research and education environments.

Booth 313
SC ATE Center: South Carolina ATE Center of Excellence
2715 W. Lucas Street
Florence, SC 29501
www.teachingtechnicians.org
SC ATE National Center: Expands excellence in technician education by linking educators to low-cost/no-cost professional development, a compendium of research and “how-to” videos on technician and STEM education.

Booth 311
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 designed 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 510
SCME: Southwest Center for Microsystems Education
800 Bradbury 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 611
SCTE: National Center for Supply Chain Technology Education
2001 Third Street
Norco, CA 92860
www.supplychainteched.org
The National Center aspires to increase the number of skilled technicians by serving as the national leader for supply chain technology education.

Booth 209
SHINE: Seattle’s Hub for Industry-driven Nanotechnology Education
9600 College Way North
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 212
Simtronics Corporation
PO Box 38
Little Silver, NJ 07739
www.simtronics.com
Simtronics provides Operator Training Simulators and 3-D Virtual Field Operator software for both industry and education. We offer a diverse model library covering virtually all Process Industries, including green energy. Off-the-shelf curriculum is also available.

Booth 204
Stratasys
5 Fortune Drive
Billerica, MA 01821
www.stratasys.com/edu
Stratasys offers 3D printers, materials and digital part services that enable students to bring design ideas and digital data to life.

Booth 512
The Center for Work Ethic Development
2525 16th Street, STE 214
Denver, CO 80211
www.workethic.org
The Center for Work Ethic Development partners with organizations across the U.S. giving practical tools for building work ethic through our innovative curriculum and certification program, Bring You’re “A” Game to Work.

Booth 207
VESTA National Center
901 S. National
Springfield, MO 65897
www.vesta-usa.org
VESTA provides students’ nationally recognized online education with access to nationally recognized expert instructors and participation in local field practicums.

Booth 111
Weld-Ed: The National Center for Welding Education and Training
1005 North Abbe Road
Elyria, OH 44035
www.weld-ed.org
Weld-Ed center offers professional development workshops to welding educators. Stop by our booth to learn about the advances Weld-Ed has attained in education and the development of new standards for welding education.
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2nd Floor

3rd Floor

Future location of M-Club Lounge Arriving May 2015
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The National Science Foundation’s grant support for two-year colleges in the Division of Undergraduate Education (DUE) and the Division of Research on Learning in Formal and Informal Settings (DRL)

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