2015 Poster Sessions

PS01
Using Flipped Classroom Resources to Teach Renewable Energy Technicians
The flipped classroom approach to instruction uses educational technology to deliver instruction outside the class and activity-based learning inside the class. This method has been successfully deployed in teaching basic DC circuit analysis, hydraulics and electrical control of hydraulic systems, and digital electronics to renewable energy technicians at Columbia Gorge Community College. The flipped classroom approach allows a degree of flexibility for nontraditional students as well as those already employed as technicians looking to upgrade their skills. A flipped classroom format allows more exposure time with instrumentation, equipment, and hands-on troubleshooting activities.

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

PS02
Welding and Nondestructive Testing Professional Development Workshop
This poster will demonstrate 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. The workshop will both introduce instructors to this curriculum and provide practical labs and exercises for hands-on learning. Instructors will also be provided with a visual inspection kit to use at their facilities.

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

PS03
Open Educational Resources: Saving Students Money Is Just the Start
Learn how Scottsdale Community College (SCC) has saved its students over $1 million annually by aggressively developing open educational resources (OER) to replace costly textbooks. The savings to students is only part of the story. The use of OER has allowed faculty to customize materials to meet the unique learning objectives of their courses. SCC’s efforts have spawned the Maricopa Millions OER project, which aims to facilitate the growth of OER within the Maricopa Community College District and beyond.

Daniel Corr, Scottsdale Community College, Scottsdale, AZ

PS05
Commercial Trainers and Experiment Kits for Teaching Renewable Energy Manufacturing
This poster will summarize 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

PS06 (PS06 & PS18 will share a poster board)
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. Arizona State is providing access to state-of-the-art clean room facilities with fabrication and characterization instruments. 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

PS18
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

PS07 (PS07 and PS20 will have a poster board)
Building the Next Digital Forensics Workforce for the Southeastern United States
This poster session will focus on the workforce development activities of the Advanced Cyberforensics Education Consortium. The consortium is working on the regional level to enable collaboration between state lead schools in Florida, Georgia, South Carolina, and North Carolina. The state-lead in Georgia is working with
many two-year colleges, technical colleges, and high schools to raise awareness and build the pipeline of digital forensics talent. The session will detail the procedures and costs associated with the creation of a functioning digital forensics lab. The consortium has also created the first digital forensics video game.

Johnathan Yerby, Kevin Floyd, Advanced Cyberforensics Education Consortium, Macon, GA

PS20

Teaching Mobile Device Forensics on a Shoestring Budget

Mobile devices have become ubiquitous in our day-to-day lives and increasingly prominent in criminal cases. A forensic examination of these devices requires specialized training and tools—both hardware and software—which often come with a high price tag. In this session we’ll discuss how we tackled these hurdles in teaching the concepts of mobile device forensics with little-to-no cost to faculty or students, and with the added challenge of teaching this subject entirely online.

Patrick Vilkonofsky, Advanced Cyberforensics Education Consortium, Daytona Beach, FL

PS08

Convergence Technology Students Present a New Perspective

Representatives of student projects from four CTC Convergence College Network (CCN) programs around the country will present this poster session. The presenters will provide an overview of recent research, problem-based learning projects, and career opportunities in the information communications technology space.

CTC Students TBD, Convergence Technology Center, Frisco, TX

PS09

c3bc: The Community College Consortium for Bioscience Credentials—Update

The c3bc, a national twelve-college consortium, was formed to develop a nationally recognizable set of core skills and competencies across the bioscience subsectors of laboratory skills, biomanufacturing, and medical devices. Together with the introduction of stackable and latticed credentials and improvements in recruitment, testing, assessment, course design, retention, and outreach, this will have the immediate effect of helping TAA-certified and other displaced workers get bioscience jobs. The longer-term effect will be a system of greater collaboration between community colleges and industry that improves preparation for workplace training. The major innovations of the c3bc to date are the creation of harmonized core skill standards across the bioscience subsectors and the beginning of the introduction of industry-recognized, stacked and latticed credentials that attest to the attainment of these core skill standards. The skill standards for medical devices are the first ever for that subsector at the entry level. The standards for laboratory skills and biomanufacturing are being revised, demonstrating how strong partnerships with industry can ensure that community college training reflects the actual workplace needs of employers. This continuous process of revision is innovative in itself.

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

PS15

Expanding Photonics Technician Education in Michigan

Year 2015 was proclaimed the International Year of Light by UNESCO. It is expected that the 21st century will depend as much on photonics or light-based technologies as the 20th century depended on electronics. A well prepared workforce is essential to sustain the growth and development of photonics technologies. Baker College introduced an Associate of Applied Science in Photonics and Laser Technology program in fall 2013 with support from the National Science Foundation’s 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

PS16

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

As a standing committee of the ACM Education Board since 1991, the Committee for Computing Education in Community Colleges (CCECC) delivered its final version (October 2014) of its curricular guidance for associate degree information technology programs—capspace.org/iTreport/. The ACM Competency Model of Core Learning Outcomes and Assessment for Associate-Degree Curriculum in Information Technology includes 50 core IT learning outcomes with associated assessment metrics. Degree and certificate program exemplars, aligning with the ACM core IT learning outcomes, are part of a growing repository at CAPspace.org. The CCECC invites institutions to highlight their IT degree and certificate programs by submitting correlations at capspace.org/correlation/.

Elizabeth Hawthorne, ACM CCECC, Bushkill, PA; Cara Tang, ACM CCECC, Vancouver, WA; Cindy Tucker, ACM CCECC, Georgetown, KY
PS17
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 environmental scans, project planning, time management, scheduling, prototype development, and, ultimately, prototype manufacturing using cutting-edge technology. 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 Woszczyna-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

PS19
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 succeed in their careers by cultivating 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 in four-day lesson plans. The CIS lessons facilitate both learning and teaching by building learners’ background knowledge in STEM and high-tech manufacturing topics. They also support development of important critical thinking, writing, research, assessment, and reading skills and are adaptable to other high-tech industry sectors.
  Danielly Orozco, Marilyn Barger, FLATE, Tampa, FL

PS21
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 and get your students the skills and background needed to contribute to this rapidly growing industry.
  Matthias Pleil, SCME, Albuquerque, NM

PS23
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 Kazarinooff, Kristine Schroeder, SHINE, Seattle, WA

PS24
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

PS25
What Would YOU Do With a 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, Grafftech, 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