alae Join the American Society for **Engineering Education in** Naki socie

122nd Annual Conference & Exposition

JUNE 14 - 17, 2015 SEATTLE, WASHINGTON

The ASEE Annual Conference and Exposition is the only conference dedicated to all disciplines of engineering and engineering technology education. As the premier event of its kind, the ASEE Annual Conference and Exposition fosters an exchange of ideas, enhances teaching methods and curricula, and provides unparalleled networking opportunities for engineering and technology education stakeholders, including deans, faculty members, researchers, and industry and government professionals.

The conference features more than 400 technical sessions, with peer-reviewed papers spanning all disciplines of engineering education; distinguished lectures, including the main plenary; award receptions and banquets; the "Greet the Stars" orientation for new ASEE members and first-time conference attendees; and the ASEE Division Mixer. The Exhibit Hall is also home to several exciting events, including the "Focus on Exhibits" Welcome Reception, Brunch, Summertime Social, and Luncheon. We look forward to welcoming you to Seattle!

Conference at a Glance

For detailed session information visit www.asee.org/osl.



Exhibit Hall Welcome Reception 6:00pm - 7:30pm

MONDAY, JUNE 15	TUESDAY, JUNE 16		WEDNESDAY, JUNE 17	
Registration Open 7:00am - 5:00pm	Registration Open 8:00am - 5:00pm		Registration Open 8:00am - 5:00pm	
Exhibit Hall Open 10:30am - 5:00pm	Exhibit Hall Open 8:45am - 5:00pm			
Technical Sessions & Business Meeting 7:00am - 8:30am	Technical Sessions & Business Meeting 7:00am - 8:30am	CMC Industry Day Breakfast 7:00am - 8:30am	Technical Sessions & Business Meetings 7:00am - 8:30am	
Main Plenary I 8:45am - 10:15am	Technical Sessions & Business Meeting 8:45am - 10:15am	CMC Industry Day Technical Session 8:45am - 10:15am	ASEE Technical Sessions & Business Meetings 8:45am - 10:15am	
Exhibit Hall Brunch & NSF Poster Session 10:30am - Noon	Main Plenary II - Best Paper Recognition & CMC Industry Speaker 10:30am - 12:15pm		Distinguished Lectures - 6 Concurrrent 10:30am - Noon	
Technical Sessions & Business Meetings 12:30pm - 2:00pm	Exhibit Hall Lunch & Division Poster Sessions 12:30pm - 2:00pm		Technical Sessions & Business Meetings 12:30pm - 2:00pm	
Technical Sessions & Business Meetings 2:15pm - 3:45pm	Technical Session & Business Meeting 2:15pm - 3:45pm	CMC Industry Day Technical Session 2:15pm - 3:45pm	Technical Sessions & Business Meetings 2:15pm - 3:45pm	
Exhibit Hall Summertime Social 4:00pm - 5:00pm	Technical Session & Business Meeting	CMC Industry Day Technical	Technical Sessions & Business	
ASEE Annual Award Recognition Ceremony 5:15pm - 6:30pm	4:00pm - 5:30pm 4:00pm - 5:30pm		Meetings 4.00pm - 5:30pm	
Division Social Events (Optional)	Division Social Events (Optional)	sion nical ons & ness ting om - om - om - om - om - om - om - om -	President's Farewell Reception - Open to All Attendees 6:00pm - 7:30pm	

12TH ANNUAL ASEE WORKSHOP ON K-12 ENGINEERING EDUCATION

Date: Saturday, June 13, 2015 Location: Sheraton Seattle Time: 8:00 a.m. - 5:00 p.m.

Presented by Dassault Systèmes

Join us for an enlightening day of professional learning. Now in its 11th year, the K-12 workshop showcases innovative products and methods for K-12 engineering instruction, providing educators with powerful tools to encourage their students to develop "engineering habits of mind." Attendees will also gain depth and breadth of understanding of the engineering practices as articulated within the latest Next Generation Science Standards.

What to expect:

- A results-oriented, interactive, daylong program of professional learning for K-12 teachers
- A wide array of quality sessions for elementary through high school-level teaching
- Engaging, fun, hands-on activities to share with students
- Ideas for promoting engineering habits of mind within lessons
- Increased awareness of engineering careers in today's world
- Free takeaway materials for your classroom
- Networking and opportunities for future collaboration
- A certificate of completion at the end of the workshop (helpful when applying for CPE/CPD credits)
- Light refreshments
- Attendee bags

4TH ANNUAL ASEE INTERNATIONAL FORUM

Date: Sunday, June 14, 2015 Location: Sheraton Seattle Time: 8:00 a.m. - 6:00 p.m.

The Fourth Annual International Forum, on June 14, will convene engineering professionals who work in academia and industry around the globe to share novel engineering education initiatives, experiences, and best practices. This is the premier event for non-U.S. and Canadian engineering education faculty members to interact with their colleagues on issues related to preparing the new "global engineer" – accreditation, curriculum and faculty development, and more. The event is conducted in collaboration with sister societies devoted to engineering education.

U557 - GREET THE STARS (FIRST-TIMERS' ORIENTATION)

Date: Sunday, June 14, 2015 Location: Sheraton Seattle Time: 3:15 p.m. - 4:00 p.m.

Calling all first-time ASEE conference participants! Not sure how to navigate the event? Overwhelmed by the myriad sessions? Want to know how to get the best from your experience?

This session is facilitated by the current and past vice presidents for member affairs and other board members, and will offer suggestions for successful participation in ASEE.

U657 - ASEE DIVISION MIXER

Date: Sunday, June 14, 2015 Location: Washington State Convention Center Time: 4:15 p.m. - 5:45 p.m.

One of our most popular events!

The Division Mixer kicks off the conference with music, drinks, food, and colleagues. This event is both a networking opportunity and a chance for divisions to showcase and promote themselves to prospective members. Tables staffed by participating divisions may feature contests and prize giveaways.

This event is complimentary for all attendees.

U759A - FOCUS ON EXHIBITS: WELCOME RECEPTION

Date: Sunday, June 14, 2015 Location: Washington State Convention Center Time: 6:00 p.m. - 7:30 p.m.

Join your colleagues at the Grand Opening of the Exhibit Hall, immediately following the Division Mixer (above). Our exhibit hall is packed with exciting products, solutions, and technologies, with new and exciting content year after year. Roam the expansive space while enjoying refreshments, catching up with old friends, and making new ones.

This event is complimentary for all attendees.

M257 - MAIN PLENARY I

Date: Monday, June 15, 2015 Location: Washington State Convention Center Time: 8:45 a.m. - 10:15 a.m.





MARIA KLAWE President of Harvey Mudd College

Maria Klawe became the fifth president of Harvey Mudd College in 2006. A renowned mathematician, computer scientist, and scholar, she is the first woman to lead the college since its founding in 1955.

Prior to joining Harvey Mudd, Klawe served as dean of engineering and professor of computer science at Princeton University, where she led the School of Engineering and Applied Science through a strategic planning exercise that created an exciting and widely embraced vision for the school. At Harvey Mudd College, she led a similarly ambitious strategic planning initiative, "HMC 2020: Envisioning the Future."



KAI KIGHT Violinist Virtuoso

Kai Kight, a former engineering student and a product of Stanford University's innovation mecca, the d. School, combines beautiful violin music with insights on engineering and design. "Innovation happens at

intersections," he notes, citing his efforts to combine classical music with hip hop. His presentations ask the question: "Are you writing new music, or are you just playing notes that have been written for you?"

This session will also feature National High School STEM Winners as well as the President's Award.

M359C - FOCUS ON EXHIBITS: BRUNCH

Date: Monday, June 15, 2015 Location: Washington State Convention Center Time: 10:30 a.m. - Noon

Our exhibitors welcome you back for food and drink to start the day. Whether it's NASCAR, a 3-D printer, or quality textbooks for your classes, you'll likely find something interesting in the hall.

This event is complimentary for all attendees.

M559B - FOCUS ON EXHIBITS: SUMMERTIME SOCIAL

Date: Monday, June 15, 2015 Location: Washington State Convention Center Time: 4:00 p.m. - 5:00 p.m.

Nothing says summer like a refreshing glass of sweet, cold lemonade. Come see what's "hot" on the Exhibit Hall Floor.

This event is complimentary for all attendees.

M657 - 2015 ASEE ANNUAL AWARDS CEREMONY

Date: Monday, June 15, 2015 Location: Washington State Convention Center Time: 5:15 p.m. - 6:30 p.m.

Sponsored by Dassault Systèmes

ASEE offers awards in a variety of areas, from best paper to teaching recognition to professional and technical honors, to a lifetime achievement award. This event showcases some of ASEE's best and brightest.

This event is complimentary for all attendees.

T357 - MAIN PLENARY II

Date: Tuesday, June 16, 2015 Location: Washington State Convention Center Time: 10:30 a.m. - 12:15 p.m.

OUTSTANDING TEACHING AWARD

2014 BEST OVERALL ZONE PAPER

2014 BEST OVERALL PIC PAPER



KEYNOTE SPEAKER:

John J. Tracy Chief Technology Officer and Senior Vice President of Engineering, Operations, and Technology The Boeing Company

John J. Tracy is chief technology officer of the Boeing Company and

senior vice president of Engineering, Operations, and Technology, reporting to Jim McNerney, the company's chairman, president, and CEO.

In addition to serving on the company's Executive Council, Tracy oversees the development and implementation of the enterprise technology investment strategy and provides strategic direction to several functions and business organizations comprising more than 100,000 employees. These include the Engineering, Operations, and Supplier Management functions, and also the Information Technology, Test and Evaluation, Enterprise Technology Strategy, Intellectual Property Management, Research and Technology, and Environment, Health, and Safety organizations.

Previously, Tracy was vice president of engineering and mission assurance for Boeing Integrated Defense Systems. Tracy had functional management responsibility for the IDS engineering processes, engineering tools, and the 32,000-person engineering team. Prior to this assignment, Tracy was vice president of structural technologies, prototyping, and quality for the Boeing Phantom Works advanced R&D unit, where he was responsible for advanced materials and processes, structural design and analysis, manufacturing technology, prototype development, and the Phantom Works Quality function.

Tracy has also served as the general manager of Engineering for Boeing Military Aircraft and Missiles in Southern California, director of the Space and Communications Advanced Engineering organization, director of operations management, and director of structures technology for Southern California Phantom Works. He joined McDonnell Douglas, which later merged with Boeing, as a stress analyst in Huntington Beach in 1981, after serving as a high school science teacher in Los Angeles.

Tracy is a member of the National Academy of Engineering and a fellow of the American Institute of Aeronautics and Astronautics (AIAA) and the Royal Aeronautical Society. He is also a fellow of the American Society of Mechanical Engineers (ASME) and the past chair of the ASME 6,000-member Aerospace Division.

He has authored more than 30 publications in the areas of composite structural mechanics, launch vehicle structures, smart structures, and aging aircraft. He currently serves on the Board of Trustees for the Illinois Institute of Technology and on the engineering advisory board for several leading universities.

Tracy received a Ph.D. in engineering (1987) from the University of California, Irvine, and a master's degree and a bachelor's degree in physics from, respectively, California State University-Los Angeles (1981) and California State University-Dominguez Hills (1976).

T459 - FOCUS ON EXHIBITS: LUNCH AND ASEE DIVISION POSTER SESSIONS

Date: Tuesday, June 16, 2015 Location: Washington State Convention Center Time: 12:30 p.m. - 2:00 p.m.

ASEE Division Poster Sessions are available for perusing over lunch. And if there's a booth you've yet to explore, this closing Exhibit Hall session will be your last chance.

This event is complimentary for all attendees.

T664 - BEST ZONE PAPER COMPETITION

Date: Tuesday, June 16 Location: Washington State Convention Center Time: 4:00 p.m. to 5:30 p.m.

ZONE I

Teresa Piliouras, Raymond Yu, Kristin Villanueva, Yingxin Chen, Holly Robillard, and Michael Berson, Best We Can Be, Inc.

Jeanne Lauer, Garret Sampel, Daniel Lapinski, and Maigh Attre, Academy of Information Technology (AITE) High School

Paper: A Deeper Understanding of Technology is Needed for Workforce Readiness – Playing Games, Texting, and Tweets Aren't Enough to Make Students Tech-Savvy

ZONE II

P. E. Arce, J. Biernacki, J. Pascal, and J. R. Sanders, Tennessee Technological University

Paper: The Da Vinci Foundry: A Powerful Learning and Thinking System to Develop the 21st Century Renaissance Engineer

ZONE III

Roy Myose, Syed Raza, Klaus Hoffmann, and Armin Ghoddoussi, Wichita State University

Paper: Correlating Engineering Statics Student Performance with Scores of a Test over Prerequisite Material Involving Problem Solving

ZONE IV

Gino Galvez, Eric Marinez, and Alvaro Monge, California State University, Long Beach

Paper: HSI STEM: Research Opportunities to Improve Retention and Increase the Pipeline to Graduate School

W757 - ASEE PRESIDENT'S FAREWELL RECEPTION

Date: Wednesday, June 17, 2015 Location: Sheraton Seattle Time: 6:00 p.m. - 7:30 p.m.

Free ticketed event

President Nick Altiero hosts a reception as his last official duty as ASEE President. Come chat with Nick, President-elect Joe Rencis, and others at this closing event of the 2015 Annual Conference. Refreshments will be served.

Complimentary for all registered attendees.



DISTINGUISHED LECTURES WEDNESDAY, JUNE 17

Date: Wednesday, June 17, 2015 Location: Washington State Convention Center Time: 10:30 a.m. - Noon

W426A - 2014 BEST PAPER PRESENTATIONS

Sponsor: ASEE Board of Directors

BEST PIC PAPERS:

PICI

Milo Koretsky, Alec Bowen, Daniel Reid, Oregon State University

Paper: Development of Interactive Virtual Laboratories to Help Students Learn Difficult Concepts in Thermodynamics

PIC II

Eli Silk, University of Michigan Shanna Daly, University of Michigan Kathryn Jablokow, Pennsylvania State University Seda Yilmaz, Iowa State University Meisha Rosenberg, Iowa State University Paper: The Design Problem Framework: Using Adaption-Innovation Theory to Construct Design Problem Statements

PIC III

Timothy Garrison, York College of Pennsylvania Paper: *Student Performance Enhancements via an Active, Integrated Engineering Physics Course*

PIC IV

Pamela S. Lotterro-Perdue, Towson University **Elizabeth Parry,** North Carolina State University Paper: Perspectives on Failure in the Classroom by Elementary Teachers New to Teaching Engineering

PIC V

James Jones, Ball State University Paper: More Than Advice: Increasing Industry Advisory Board Member Involvement

PANEL DISCUSSION: UNIFYING THE ENABLERS FOR INNOVATION AND THE TALENT FOR MAKING VALUE FOR AMERICA

Sponsor: Corporate Member Council Co-Sponsors: Engineering Deans Council, Manufacturing Division, Engineering Research Council*, Engineering Technology Council Innovations in manufacturing are driving the nation's economic engine, and actions in business, education, and government are the centerpiece for prolonged success. The National Academy of Engineering recently launched a "Making Value for America" project to examine best practices and educational approaches that build 21st-century workforce skills in today's workforce. In 2011, a working group of the U.S. President's Council of Advisors on Science and Technology (PCAST) created the Advanced Manufacturing Partnership (AMP) to recommend improvements to the innovation ecosystem, secure the talent pipeline, and improve the business climate. That partnership concluded its efforts in 2014 with a second report aimed at accelerating the budding resurgence in the U.S. advanced manufacturing sector.

Manufacturing research infrastructure is now emerging for U.S. industry and academia to solve industryrelevant problems, organized around a network of "Institutes for Manufacturing Innovation" recommended by the first AMP report. These institutes are part of a National Network for Manufacturing Innovation (NNMI) and are partnerships of all stakeholders: industry and industry organizations, government, and academia. They are engaging a wide range of industry and academic partners in activities influencing and creating best practices and educational approaches for building workforce skills at all levels and enhancing manufacturing capabilities in companies large and small.

This session unifies the insights from the AMP reports and the Making Value for America study. Its focus is on the emerging directions, trends, and resources for research, innovation, and talent development to grow the economy.

The various facets of innovation, engineering education, research, and best practices are depicted through perspectives of industry, education, and government. Understanding the connectivity and opportunities for each sector is intended to help support the roles in which both can engage to be an integral part of the growing innovation economy.

*invited



EMCEE: C. Diane Matt Executive Director WEPAN, Inc.

Diane Matt, chair of the ASEE Corporate Member Council, is a Certified Association Executive with 20-plus years of experience in leading not-for-profit organizations. She

Conference Highlights

was formerly director of strategic partnerships for the Geological Society of America, a nonprofit organization of 17,000 members dedicated to the advancement of the geosciences, and also served as executive director of the Associated Landscape Contractors of Colorado. She has received numerous awards, including the Colorado Society of Association Executives Annual Association Executive Award of Excellence and the Green Industry Person of the Year award. She is a geoscientist with B.A. and M.S. degrees from Indiana University and the University of Calgary, respectively.



MODERATOR: CARRIE HOUTMAN Government Affairs Director The Dow Chemical Company

Carrie Houtman is the government affairs director for the Dow Chemical Company, supporting the development of Dow's positions on matters

of national and state public policy. She assumed the role of North America STEM Implementation leader in October following more than a year focused on education policy. Prior to her appointment in public policy, she was responsible for the global product stewardship activity for Dow's basic and specialty chemicals divisions, overseeing regulatory requirements on a range of chemical management issues. Houtman has also led efforts in characterizing product hazards and conducting risk assessments, and was project leader for the team that created nearly 300 product safety assessments in support of Dow's 2015 Sustainability Goals. Houtman began her career with Dow in 1996 in technical service and development for Emulsion Polymers and Dow Microbial Control, followed by various assignments in Dow's industrial toxicology laboratory. She is a graduate of the Pennsylvania State University, with a B.A. in general arts and sciences, and is a certified Six Sigma Black Belt.



PANELISTS: GEROULD YOUNG Director, Advanced Manufacturing & Materials Boeing Commercial Airplanes

Gerould (Jerry) Young is director of Advanced Manufacturing & Materials for Boeing Commercial Air-

plane's product development organization, the team responsible for planning and executing product and production-system innovation. Prior to this assignment, he was director of materials and manufacturing technology for Boeing Research & Technology with responsibility for finding and developing nextgeneration technology for Boeing's future products. Young has worked on a variety of programs for Boeing's defense and commercial businesses, including the B-2 stealth bomber, Joint Strike Fighter, F-22, 777, and 787. He holds B.S. and M.S. degrees in mechanical engineering from the University of Utah and is a graduate of the Advanced Management Program at University of Pennsylvania's Wharton School. He also holds four patents, has authored a number of technical papers, and is a member of ASME and SAMPE.



S. JACK HU

Interim Vice President for Research University of Michigan

S. Jack Hu was appointed the interim vice president for research at the University of Michigan, effective January 1, 2014. He is also a professor of mechanical engineering, pro-

fessor of industrial and operations engineering, and the J. Reid and Polly Anderson Professor of Manufacturing Technology in the College of Engineering.

As the vice president for research, Hu has overall responsibility for nurturing the excellence and integrity of research across the campus. He oversees the U-M Office of Research, which promotes interdisciplinary research, develops and implements research policy, provides central administrative services in support of faculty research, innovation, and economic outreach, and manages activities related to compliance and the responsible conduct of research. Before his current appointment, Hu served as associate dean for academic affairs (2009-2013) and associate dean for research and graduate education (2007-2009), both in U-M's College of Engineering.

Hu's teaching and research interests include manufacturing systems design and operations, assembly modeling, and statistical quality methods. He is the recipient of various awards, including the SME Outstanding Young Manufacturing Engineer Award, National Science Foundation CAREER Award, ASME William T. Ennor Manufacturing Technology Award, the College of Engineering Research Excellence Award, and several best paper awards. He is a fellow of the American Society of Mechanical Engineers (ASME) and the International Academy for Production Engineering (CIRP). He served as the editor in chief of the Journal of Manufacturing Systems from 2008 to 2013. He received his B.S. from Tianjin University, China, in 1983, and M.S. and Ph.D. from the University of Michigan in 1986 and 1990, respectively.





MARK J. SHUART R&D Facilities Program Manager Advanced Manufacturing Office Energy Efficiency and Renewable Energy Office Department of Energy

Mark J. Shuart is the R&D facilities program manager for the Ad-

vanced Manufacturing Office (AMO) in the Energy Efficiency and Renewable Energy Office of the Department of Energy. His research interests focus on establishing shared manufacturing facilities that develop advanced technologies for energy-efficient applications. He leads the AMO team that creates and manages manufacturing development facilities, energy innovation hubs, and manufacturing innovation institutes. He is also a research professor in the Department of Materials Science and Engineering at Virginia Tech. He joined DOE after retiring from the NASA Langley Research Center (LaRC). During 32 years at the LaRC, Shuart held several line management positions, including director for structures and materials, and became a member of the Senior Executive Service in 1998.

Shuart is an internationally recognized authority on the behavior of composite materials and structures. He has directed major contracts with Boeing, the former McDonnell Douglas, and Lockheed-Martin to develop composite structures technology for primary aircraft structures. He has also directed grant activities at major universities. Dr. Shuart is the author or co-author of more than 80 formal publications, oral presentations, and other significant contributions that describe advanced structures and materials technologies. He holds a B.S. in engineering science and mechanics and an M.S. in engineering mechanics from Virginia Tech and a Ph.D. in applied sciences/mechanical and aerospace engineering from the University of Delaware. Shuart completed the Program for Management Development at the Harvard Business School and Leadership for a Democratic Society at the Federal Executive Institute. He received a NASA Outstanding Leadership Medal for his contributions to structures and materials research. He is an associate fellow of the American Institute of Aeronautics and Astronautics and a past chairman of AIAA's Materials Technical Committee. He has also received the Outstanding Alumni Award from the Center for Composite Materials at the University of Delaware.



KATE S. WHITEFOOT

Senior Program Officer and Robert A. Pritzker Fellow National Academy of Engineering

Kate S. Whitefoot is a senior program officer and the Robert A. Pritzker fellow at the National Academy of Engineering. She directs the NAE's

portfolio of programs on manufacturing, design, and innovation, conceptualizing and managing studies on technology change and its impact on manufacturing and high-tech industries, the environment, and innovation and education policy.

Whitefoot co-edited the NAE report on Making Value for America. She has also published several studies analyzing the influence of energy policies on manufacturers' product design decisions and consequent environmental emissions. This work appears in the *Journal of Industrial Ecology, Energy Policy*, the *Journal of Mechanical Design*, and other publications and is featured in the *Washington Post* and *Popular Mechanics*.

W351•DISTINGUISHED LECTURE: NATIONAL ACADEMIES REPORT ON CAREER CHOICES OF WOMEN ENGINEERS

Dist. Lecture • Women in Engineering Division and Minorities in Engineering Division



ALICE MERNER AGOGINO Professor of Mechanical Engineering

University of California, Berkeley

Alice M. Agogino is the Roscoe and Elizabeth Hughes Professor of Mechanical Engineering and is affiliated faculty at the Haas School of

Business at the University of California at Berkeley. She directs the BEST (Berkeley Energy and Sustainability Technologies/Berkeley Expert Systems Technologies /Berkeley Emergent Space Tensegrities) Lab and co-directs the Berkeley Institute of Design, the Human-Centered Design course threads for undergraduates, and the Engineering and Business for Sustainability graduate certificate program.

W333•DISTINGUISHED LECTURE: TO AND THROUGH: CREATING AN ECOSYSTEM OF ACHIEVEMENT FOR COLLEGE SUCCESS

Dist. Lecture • K-12 & Pre-College Engineering Division, Minorities in Engineering Division, Women in Engineering Division, Community Engagement in Engineering Education Division, and Student Division

KARL REID

National Society of Black Engineers Executive Director

Karl Reid is the newly appointed executive director of the National Society of Black Engineers (NSBE), a 30,000-plus-membership organization in Alexandria, Va., whose mis-

sion is to increase the number of culturally responsible black engineers who excel academically, succeed professionally, and positively affect the community. For more than 15 years, Reid has been a leading advocate for increasing college access and opportunity for low-income and minority youth. He joined NSBE after serving as senior vice president of research, innovation, and member-college engagement at the United Negro College Fund, where he oversaw new program development, research, and capacity building for the organization's 37 historically black colleges and universities.

Prior to joining UNCF, Reid was associate dean of undergraduate education and director of the Office of Minority Education at the Massachusetts Institute of Technology (MIT), where he was responsible for the academic performance and leadership development of underrepresented minority students. He also served as assistant to the MIT chancellor for student diversity. Earlier in his career, Reid served for eight years as executive director of engineering outreach programs for MIT's School of Engineering, where he directed local and national college access programs that aimed to increase the number of students from underserved and underrepresented communities prepared to study science, technology, engineering, and mathematics (STEM). He also lectured on race, identity, and academic achievement and served on MIT's Committee on Undergraduate Engineering Practice, the Committee on Campus Race Relations, and the Presidential Task Force on Minority Student Achievement.

Born and raised in New York City and Long Island, New York, Reid earned a B.S. and an M.S. in materials science and engineering from MIT and doctorate of education from the Harvard Graduate School of Education. His research interests include exploring the relationships between racial identity and self-efficacy and their influence on the academic achievement of African-American males in higher education.

After graduating from MIT, Reid worked for 12 years in the computer industry in product management, marketing, sales, and consulting for several companies, including IBM, where he won several regional and branch awards. He is a member of Tau Beta Pi, the national engineering honor society. Among other activities, he directs Christian education at the Reid Temple AME Church and blogs about academic achievement and success strategies.

Reid is a recipient of the NSBE Golden Torch Award for "Minority Engineering Program Director of the Year" and the Outstanding Advisor of the Year award from the MIT Academic Resource Center. He is also a recipient of the YMCA Black Achievers Award, the MIT Presidential Award for Community Service, and the MIT Excellence Award for his outreach efforts.

W316•DISTINGUISHED LECTURE: POWER TO THE PEOPLE: ENGINEERING EDUCATION AND ENERGY POVERTY ALLEVIATION AND A FRAMEWORK FOR CATALYZING CHANGE IN ENGINEERING EDUCATION

Dist. Lecture • Energy Conversion and Conservation Division and Electrical and Computer Division



HENRY LOUIE

Associate Professor Department of Electrical and Computer Engineering Seattle University

Henry Louie is an associate professor at Seattle University in the Department of Electrical and Computer

Engineering. He serves on the Governing Board of the IEEE Power and Energy Society (PES), is the founding secretary of the IEEE PES Working Group on Sustainable Energy Systems for Developing Countries, and was technical program co-chair of the 2012 IEEE Global Humanitarian Technology Conference. He has led energy development projects over several years in Zambia and Kenya and is a member of the IEEE PES Community Solutions Initiative, which seeks to use renewable energy and technology to improve lives of people in remote communities in a sustainable way. Louie received his B.S.E.E. from Kettering University, his M.S. from the University of Illinois, and his Ph.D. from the University



of Washington. A senior member of IEEE, he received the 2013 IEEE Region 6 Northwest Area Outstanding Educator award and was named a distinguished lecturer of IEEE in 2014 for talks related to energy poverty.



SUSAN ELROD

Interim Provost and Vice President for Academic Affairs Chico State University

Susan Elrod, a distinguished leader and researcher, is the interim provost and vice president for academic affairs at Chico State University.

W357A•DISTINGUISHED LECTURE: THE INTERNET OF THINGS: A SMART CONNECTED CRISIS?

Sponsored Program



PRESENTERS: JOHN STUART Senior Vice President Global Academic Programs, PTC

HAM

ALISTER FRASER

Senior Manager Education Partner Programs for the Americas

Smart products, embedded with sensors and mechanisms that link them through the Internet, are turning the physical world into an infor-

mation system, connecting everything from homes to Happy Meals. The number of things connected to the Internet now exceeds the total number of humans on the planet. Projections indicate that by 2025, 80 to 100 percent of all manufacturers will be using IoT (Internet of Things) applications, leading to a potential economic impact of as much as \$2.3 trillion. But continued meteoric growth of the IoT hinges on a crucial ingredient: education. In this lecture, PTC will present the outcomes of a project conducted in partnership with the University of Massachusetts-Amherst and demonstrate a free classroom IoT toolkit. This toolkit will let students come up with ideas for connected products, design their mechanical parts using 3-D modeling software, print them with a 3-D printer, add inexpensive sensors, and put together their own monitoring and control applications.

This year's conference and exposition features an exciting schedule of activities in the exhibit hall, including refreshment breaks, product demonstrations, and interactive attractions.

EXPOSITION HOURS

Sunday, June 146:00 p.m. to 7:30 p.m.Monday, June 1510:30 a.m. to 5:00 p.m.Tuesday, June 168:45 a.m. to 5:00 p.m.

'FOCUS ON EXHIBITS' EVENTS

"Focus on Exhibits" events are exclusive; no sessions or other events will be held during these times. This allows attendees to visit the exhibit hall floor and provides an excellent networking opportunity in a dynamic atmosphere. The 2015 ASEE Annual Conference will feature more than four hours of "Focus on Exhibits" events, all of which include complimentary food and drinks.

See the Conference Highlights section above for details about important events in the hall. Also of note, our popular **Two-year College Model Design Competition** will take place Monday from 10:30 a.m. to 3:30 p.m. See more details below.

The annual ASEE Model Design Competition, sponsored by the Two-year College Division (TYCD), will be held on Monday, June 15. Teams of freshman and sophomore engineering and engineering technology students will design and build a robot to collect colored golf balls and deposit them in a box in the center of the 8' X 8' track. Additionally, student teams will participate in an Exhibition Session, where they will display their robots on a table and discuss their designs with competition judges, students, and conference attendees. The Exhibition Session will be held from 8 a.m. to 11 a.m. on June 15 in the exhibit hall. Robot testing will begin at 1 p.m. in the exhibit hall.

ABET Sessions

ASEE is pleased to partner again with ABET (formerly the Accreditation Board for Engineering and Technology). Below is a listing of ABET sessions being offered at the ASEE Annual Conference.

U264A - SUNDAY WORKSHOP: ABET FUNDAMENTALS OF PROGRAM ASSESSMENT WORKSHOP

Workshop - Sponsored Sessions Date: Sunday, June 14, 2015 Location: Washington State Convention Center, Room 303 Time: 9:00 a.m. - 4:00 p.m.

Ticketed event: Advanced Registration - \$175 advanced registration and \$185 on-site registration

The ABET Program Assessment Workshop is designed to help faculty and administrators develop their program assessment skills with a one-day workshop. Participants will have the opportunity to broaden their understanding of the continuous quality improvement of student learning through the design of assessment processes, development of measurable student outcomes, and application of data collection and data reporting methods. This workshop is interactive and those attending will work in small groups applying the concepts learned throughout the day. Participants will receive a workshop booklet containing all slides and reference materials.

M159E•ABET SESSION: WHAT YOU NEED TO KNOW ABOUT ABET ACCREDITATION

Technical - ASEE Headquarters Date: Monday, June 15, 2015 Location: Washington State Convention Center, Room 304 Time: 7:00 a.m. - 8:30 a.m.

If you are new to ABET accreditation, this session is for you. Topics include what programs are accredited, what accreditation criteria and procedures are, who writes them, who serves as an evaluator and how evaluations are assigned to your program, who makes final accreditation decisions and how, how assessment tools are used and misused in the ABET process, and whom ABET matters to (and why). Come ready with your questions and feedback for senior ABET representatives.

M559A - ABET SESSION: WHAT'S NEW IN ABET ACCREDITATION?

Technical - ASEE Headquarters Date: Monday, June 15, 2015 Location: Washington State Convention Center, Room 304 Time: 2:15 p.m. - 3:45 p.m.

Since 2009, the Engineering Accreditation Commission's Criteria Committee has carefully reviewed, assessed, and evaluated Criterion 3 Student Outcomes. The focus of this activity has been to explore opportunities for keeping the engineering criteria current while improving the effectiveness of the accreditation process. The EAC is seeking to develop a set of student outcomes that are applicable across all engineering programs and that are necessary for professional practice. Concurrently, the EAC also wants to establish that the evaluation of these outcomes can be reasonably achieved by institutions within the engineering curriculum.

This session will highlight comments, input, and feedback received by ABET headquarters and the ABET Engineering Accreditation Commission's plan to move forward.

T551B•HOW TO BECOME AN ABET PROGRAM EVALUATOR

Technical - Women in Engineering Division Date: Tuesday, June 16, 2015 Location: Washington State Convention Center, Room 307 Time: 2:15 p.m. - 3:45 p.m.

Each year, more than 2,200 academic administrators and faculty, industry and government officials, and technical professionals serve as ABET program evaluators, making initial accreditation recommendations and working together to ensure quality in technical education worldwide. This session provides information for prospective ABET volunteers and covers: 1) ABET's need for new volunteers; 2) the nature of program evaluator work; 3) what's in it for you; 4) threshold requirements for service and the program evaluator selection process; 5) training requirements; and 6) the program evaluator "life cycle."

T659 - ABET SESSION: KEEP CALM AND CARRY ON! - MAKING PREPARATIONS FOR THE SITE VISIT

Technical - ASEE Headquarters Date: Tuesday, June 16, 2015 Location: Washington State Convention Center, Room 304 Time: 4:00 p.m. - 5:30 p.m.

ABET recognizes that coordinating the many moving parts for the on-site review can be overwhelming for many programs. This session will be organized around a panel representing both the EAC and ETAC Commissions and institutional representatives who had ABET visits during the fall of 2014. This session will highlight best practices from the viewpoints of both the program evaluators and institutional representatives and will be of interest to institutional representatives and others preparing for on-site visits. Time will be allocated for questions and answers.

CONVENING "COMMUNITIES OF PRACTICE"

Tuesday, June 16, 2015

Fostering industry/academic collaboration to speed the development of active teaching and learning in engineering education; active, hands-on learning approaches have proved effective in many settings. One impediment to broader adoption of innovative teaching models like the "flipped classroom" and pervasive use of modeling and simulation in engineering education is the relative dearth of teaching and learning tools to support them. "Communities of Practice" can accelerate deployment of these new tools.

Communities of Practice are collaborative groups of academics and professionals from hardware, software, and publishing industries who share a commitment to leveraging innovation to improve education. ASEE offers a unique forum in which diverse stakeholders, including business competitors, can collaborate in conceiving and developing tools for next-generation engineering education. With the support of three other ASEE councils (Engineering Research Council, Engineering Deans Council, and Engineering Technology Council), the Corporate Member Council has launched a new Special Interest Group to focus on these efforts: Communities of Practice (CoP). CMC proposes that Industry Day 2015 be organized around the Communities of Practice theme, with sessions aimed at forums for industry/academic exchange of effective practices to foster new active teaching and learning models. The proposed Industry Day is composed of three parts.

In the opening session, business leaders will frame the opportunity in order to stimulate dialogue with academic attendees. Representatives from hardware, software, and publishing firms will delve into the trends that are catalyzing innovation (the explosion of tablets and other mobile devices, new platforms for content delivery and consumption, and new models for using the Web to supplement in-person teaching) and explore how communities of practice can support the implementation and adoption of these new technologies and methods. The second session will permit a deeper dive into specific models of innovation that support active, "flipped classroom" learning in engineering courses, along with a better combination of theory and practice

Session participants will present:

- Sneak peeks at innovative new models in need of pilot partners;
- Best practices for piloting and scaling new teaching models centered on innovative products and the communities designed to support their use;
- Successful initiatives that provide lessons learned and indicate paths forward. The third and final session will offer a forum for academics to define needs and offer direction. Thought leaders in engineering education will raise and explore questions such as:
- Which forms of active learning show most promise in engineering education, and what tools do they require?
- Can engineering education be "flipped" without overturning what works?
- How can new technologies, product models, and institutional relationships address persistent problems in engineering education: low enrollment, high attrition, and underrepresentation by women and other groups?
- How can new product models avoid problems of past and current models (unequal access, high cost, and poor adaptability for disability or diverse learning styles)?

Taken as a whole, this series of sessions aims to catalyze discussion and spur collaboration between industry and academia in creating next-generation tools for engineering education.



T163 - INDUSTRY DAY SESSION: CIP/CMC JOINT BREAKFAST

Date: Tuesday, June 16, 2015 Time: 7:00 a.m. - 8:30 a.m.

Working session on CMC strategic review and direction of CMC/CIPD collaboration. Report from CMC/ CIP leadership on:

- Long-range planning committee working group
- CMC Board and member review of mission and goals
- Community outreach with stakeholders external to CMC

T263 - INDUSTRY DAY: CMC ROUNDTABLE: BUILDING A BIGGER TENT FOR CORPORATE-UNIVERSITY COLLABORATION

Time: 8:45 a.m. - 10:15 a.m.

How can corporations and educational institutions work better together to expedite the adoption of best practices in research, co-ops, and internships; prepare a diverse community of graduates; and educate in-service engineers? Representatives from the Corporate Member Council will share a work-in-progress presentation of CMC's strategic review and lead an open discussion to inform future efforts. Attendees are invited to share lessons learned, best practices, challenges, and success stories as we look to the future for building stronger industry/academic partnerships. (Invited divisions: CIP, CPD, CEED and ETD)

Moderated by Diane Matt, WEPAN; Dan Sayre, Wiley

T304 - MAIN PLENARY II FEATURING JOHN TRACY, BOEING

Time: 10:30 a.m. - Noon

T563 - INDUSTRY DAY: CMC PANEL: EDUCATING A DIVERSE COMMUNITY OF GLOBAL PRACTITIONERS

Time: 2:15 p.m. - 3:45 p.m.

Invited panelists will discuss lessons learned, best practices, and future directions on efforts to improve the diversity, career-readiness, and global perspective of new engineering graduates and in-service engineers.

T663 - INDUSTRY DAY: CMC PANEL: UNIVERSITY-INDUSTRY COLLABORATIONS ON RESEARCH, CO-OPS, AND INTERNSHIPS

Time: 4:00 p.m. - 5:30 p.m.

Invited panelists will discuss lessons learned, best practices, and future directions for corporate-academic collaboration on research, co-ops, and internship programs.

T763 - INDUSTRY DAY: INSTITUTIONAL COUNCIL RECEPTION AND DINNER (BY INVITATION ONLY)

Time: 7:00 p.m. - 9:00 p.m.

Free ticketed event

Annual dinner for members of the Engineering Deans Council, Engineering Technology Council, and Corporate Member Council.

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2015 Exhibit Hall Floor Plan

Washington State Convention Center





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https://www.asee.org/conferences-and-events/conferences/annual-conference/2015/registration

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