

Conference for Industry and Education Collaboration

February 8 - 10, 2023

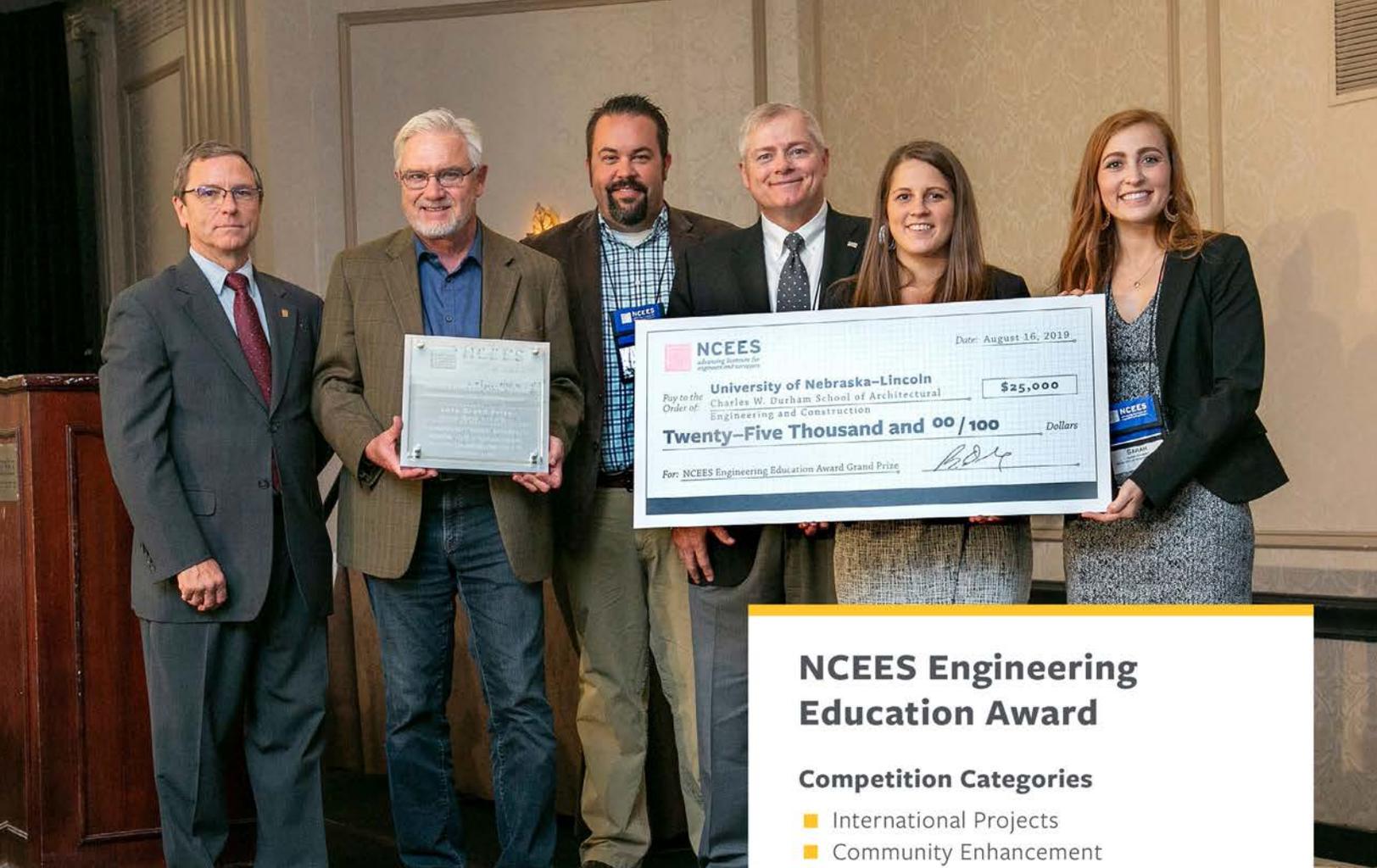


**RISCIEC**

Recharge Innovate Shape Engineering Education

**2023**  
Charleston, South Carolina

 **ASEE**



## NCEES Engineering Education Award

### Competition Categories

- International Projects
- Community Enhancement
- Public Welfare and Health Services/Care
- Energy and Sustainability
- Device/Design/Prototype
- Freshman/Sophomore Design
- Innovation

NCEES wants to reward the country's best collaborative entries. EAC/ABET-accredited programs from all engineering disciplines are invited to compete for a number of prizes.

**Grand Prize:** \$25,000

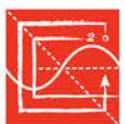
**7 Awards:** \$10,000 each

 EDUCATION

# 2023 NCEES Engineering Education Award Call for Submissions

Enter by May 4, 2023

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## WELCOME TO CIEC 2023

Hello CIEC 2023 Participants,

Welcome to the 2023 Conference for Industry and Education Collaboration (CIEC 2023)!

We are thrilled to bring together engineering educators, students, and industry leaders to share ideas and collaborate between education and industry. The theme of the 47th annual CIEC conference Recharge, Innovate, and Shape Engineering (RISE) reflects our commitment to engineering education and collaboration with industry after the COVID pandemic. It is more important than ever for industry leaders and educators to work together to ensure that our students are prepared for the workforce. This conference is an opportunity for us to come together and discuss the latest trends and challenges, and to learn from each other's successes and failures and collaborate.

The CIEC 2023 conference presents 35 technical sessions, a plenary session, an industry panel, an expo, a poster competition, and many networking activities (such as the Explore Engineering in Charleston Museum Networking Dinner on Tuesday, the behind-the-scenes tour of the Boeing facilities on Friday, and the Corporate Networking Golf Scramble on Friday). We are honored to have a diverse group of speakers and panelists from many education institutions and industries, who will share their insights and experiences on how we can work together to improve education and workforce development to meet the industry needs. We will have sessions dedicated to specific topics such as developing industry talent pipelines, addressing skill gaps, diversity and innovation in engineering, university-industry collaboration, and many other timely topics. Please also check out the expo exhibitors and the student posters.

There will also be plenty of opportunities for networking and collaboration. We encourage you to take advantage of the time outside of the formal sessions to connect with other attendees, exchange ideas and make new connections. If this is your first time attending the CIEC conference, please attend our New Attendee Welcome Reception (5:00PM on Feb. 7, Room 8) to learn more about CIEC and the American Society for Engineering Education (ASEE).

We are excited to showcase the city of Charleston, known for its rich history, southern hospitality, beautiful architecture, and delicious cuisine. We hope that you will take some time to explore the city and experience all that it has to offer. Check out [www.explorecharleston.com](http://www.explorecharleston.com) for more information about the things you can do while you are here in Charleston.

We are confident that CIEC 2023 will be a valuable experience for you, and we hope that you will leave with new ideas and new connections, and you will be recharged to innovate and shape engineering education and industry collaboration.

Thank you for joining us and we hope you have an enjoyable and productive time in Charleston.

**The CIEC 2023 Conference Management Team**

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## CIEC 2023 CONFERENCE MANAGEMENT TEAM

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## **ABOUT THE CONFERENCE FOR INDUSTRY AND EDUCATION COLLABORATION (CIEC)**

The Conference for Industry and Education Collaboration (CIEC) began in 1976 as an annual mid-winter meeting for four divisions of the American Society for Engineering Education (ASEE): the Cooperative and Experiential Education Division (CEED), the College Industry Partnership Division (CIPD), the Continuing Professional Development Division (CPDD), and the Engineering Technology Division (ETD).

The CIEC was conceived and designed as a mechanism through which the Divisions of ASEE with a commonality of interests could meet to jointly share information, high impact practices, and discuss problems, issues, and concerns. The CIEC encompasses a wide spectrum of ideas, philosophies and methods that are valuable in preparing individuals to serve in the profession of engineering, improving their growth and proficiency as contributing members of the profession. Engineering education faces challenges that go far beyond the realm of classroom teaching and into the real world of professional engineering practice.

The CIEC is managed by an Executive Board consisting of the Chair and Chair-Elect (or an appropriately designated substitute) of the conference's sponsoring Divisions. Each CIEC conference will have a conference management team headed by a General Conference Chair who has overall responsibility to the Board for budgeting, logistics, programming, and financial reporting. The Conference Management Team consists of representatives from each Division.

The annual CIEC conference usually includes pre-conference workshops or trainings, technical sessions, plenary sessions, industry panels, exhibitions, posters, and other programs emphasizing the mutually beneficial partnerships between industry and education.

### **American Society for Engineering Education (ASEE)**

Founded in 1893, the American Society for Engineering Education is a nonprofit organization of individuals and institutions committed to furthering education in engineering and engineering technology. It accomplishes this mission by promoting excellence in instruction, research, public service, and practice.

### **Cooperative and Experiential Education Division (CEED)**

This division strives to develop high principles and maintain the integrity of cooperative education throughout academia and industry. The general goals of the division are to foster a better understanding of cooperative education, improving co-op services to employers, and promote cooperative education in engineering and engineering technology to business and industry both national and international. The division also emphasizes professional standards and accreditation of co-op programs.

### **College-Industry Partnerships Division (CIPD)**

CIPD is an organization that fosters a strong alliance between engineering employers, educators and those interested in promoting partnerships that enhance science and technology.

### **Continuing Professional Development Division (CPDD)**

CPDD fosters the development, delivery, and improvement of continuing education in all areas that pertain to allied branches of science, technology, engineering, and math. CPDD provides advocacy for and leadership in lifelong learning and it creates opportunities for the exchange of information and expertise among providers and consumers of educational programs.

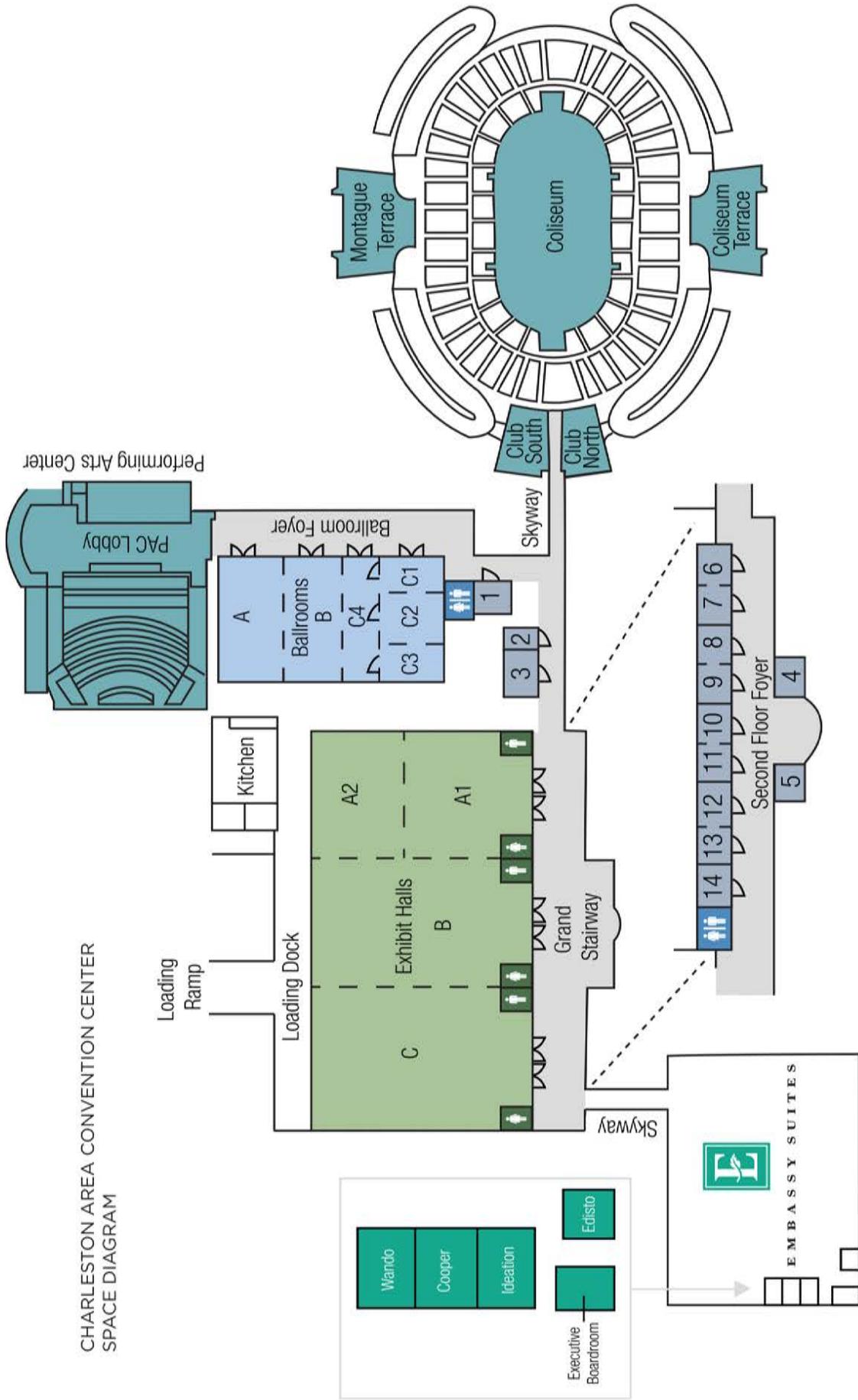
### Engineering Technology Division (ETD)

ETD has as its principal function the support of individual member interests related to the field of engineering technology. Its membership is composed of public and private two- and four-year engineering technology educators from all over the world as well as representatives from industries that employ engineering technology graduates.

## CIEC HISTORY - YEAR AND LOCATION

#	YEAR AND LOCATION	#	YEAR AND LOCATION
1	1976 Orlando, FL	26	2001 San Diego, CA
2	1977 San Antonio, TX	27	2002 Sarasota, FL
3	1978 San Diego, CA	28	2003 Tucson, AZ
4	1979 Tampa, FL	29	2004 Biloxi, MS
5	1980 Tucson, AZ	30	2005 Savannah, GA
6	1981 Lake Buena Vista, FL	31	2006 San Antonio, TX
7	1982 San Diego, CA	32	2007 Palm Springs, CA
8	1983 Lake Buena Vista, FL	33	2008 New Orleans, LA
9	1984 Dallas, TX	34	2009 Orlando, FL
10	1985 San Diego, CA	35	2010 Palm Springs, CA
11	1986 New Orleans, LA	36	2011 San Antonio, TX
12	1987 Lake Buena Vista, FL	37	2012 Orlando, FL
13	1988 San Diego, CA	38	2013 Mesa, AZ
14	1989 New Orleans, LA	39	2014 Savannah, GA
15	1990 Lake Buena Vista, FL	40	2015 Palm Springs, CA
16	1991 San Diego, CA	41	2016 Austin, TX
17	1992 Las Vegas, NV	42	2017 Jacksonville, FL
18	1993 Lake Buena Vista, FL	43	2018 San Antonio, TX
19	1994 San Antonio, TX	44	2019 New Orleans, LA
20	1995 New Orleans, LA	45	2020 Orlando, FL
21	1996 San Jose, CA	-	2021 None (COVID Pandemic)
22	1997 Tampa, FL	46	2022 Phoenix, AZ
23	1998 Savannah, GA	47	2023 Charleston, SC
24	1999 Palm Springs, CA	48	2024 Garden Grove, CA
25	2000 Lake Buena Vista, FL	49	2025 Henderson, NV

CHARLESTON AREA CONVENTION CENTER  
SPACE DIAGRAM



COLISEUM	Sq. Ft.	Room Size	Ceiling Height	Theater	Classroom	Reception	Banquet 10	10 x 10	U Shape	Conference
Coliseum	30,000	N/A	Varies	14,000	N/A	N/A	N/A	N/A	N/A	N/A
Montague / Coliseum Terrace each	7,400	93' x 73'	20'	720	345	740	370	N/A	N/A	N/A
Coliseum Club South	1,400	N/A	11'	75	40	125	70	N/A	20	20
Coliseum Club North	1,700	N/A	11'	150	75	200	100	N/A	30	30

# 2023 Conference on Industry and Education Collaboration (CIEC) - Programs At A Glance

February 8-10, 2022, Embassy Suites Charleston Airport Hotel Convention Center, North Charleston, SC.

Time	Cooperative & Experiential Education Division (CEED)	College-Industry Partnership Division (CIPD)	Continuing Professional Development Division (CPDD)	Engineering Technology Division (ETD1)	Engineering Technology Division (ETD2)
8:00AM	CEED Division Meeting (12:00-4:00PM)		CPDD Board Meeting (8AM-12PM)	ETD Workshop (1:00-3:00PM)	
5:00 PM			CIEC New Attendee Welcome Reception (Room 9)		
6:00-9:00PM		Explore Engineering in Charleston Museum Networking Dinner			
Wednesday, February 8					
8:00 AM	CEED Business Meeting (Room 6)	CIPD Business Meeting (Room 8)	CPDD Business Meeting (Room 10)	ETD Business Meeting (Room 12)	
9:00 AM		Plenary Session (Ballroom B)			
10:30 AM		Expo and Poster Open (Expo - Second Floor Foyer; Poster - Room 4) and Refreshment Break (Second Floor Foyer)			
11:00 AM	Bridging Neurodiverse STEM Student (Room 6)	Structuring Win/Win Partnerships in Industry-Academia Engagement (Room 8)	Serving Employers and Students with Customer Focused Programs (Room 10)	Mini-Grants Revealed (Room 12)	ECEDTHA Meeting (Room 5)
12:30 PM	An "Awareness Gap" to Support Student Professional Development in the Classroom; Perfectly Imperfect: Addressing Students' Failures During Experiential Learning (Room 6)	University-Industry Collaboration in Developing Micro-credentials for Engineering Students and Workforce (Room 8)	Industry-Education Networking Luncheon (Buffet, Ballroom B)		
2:00 PM		Contract to Tenure-Track - Strategies for Engaging Faculty (Room 10)	Innovation and Design through Industry Partnership (Room 12)		
3:30 PM		Comfort Break (Second Floor Foyer)			
4:00 PM	Finding New Ways to Develop Industry/Talent Pipelines; Enhancing Co-op Student Experience through Appreciative Advising and Peer Mentorship (Room 6)	Models and Frameworks for College-Industry-Government Partnerships in Industry 4.0 Engineering Workforce Development (Room 8)	Post-COVID Technology: Paradigm Shift or Pendulum Swing (Room 10)	Developing Workforce for the Blue Economy: Marine Engineering Technology Programs (Room 12)	Industry Informed Curricular Development in Engineering Technology I (Room 5)
4:30-6:00PM		ETD Board Meeting (Room 14)			
6:00-8:00PM		CIEC Opening Reception ( First Floor Ballroom Foyer)			
Thursday, February 9					
8:00 AM	CEED Business Meeting (Room 6)	CIPD Business Meeting (Room 8)	CPDD Business Meeting (Room 10)	ETD Business Meeting (Room 12)	
9:00 AM	Industry Perspective - Preparing Students for Experiential Education (Room 6)	Collaboration Between Academia and Industry on Curricular Materials and Experiential Learning (Room 8)	Expo and Poster Open (Expo - Second Floor Foyer; Poster - Room 4)	Integrating Industry 4.0 into Engineering Technology Curriculum I (Room 12)	Engineering Technology National Forum (Room 5)
10:30 AM		Refreshment Break (Second Floor Foyer)			
11:00 AM	Diversity and Innovation in Engineering; Women in engineering (Room 6)	University-Industry collaboration for Capstone Design Projects (Room 8)	US News Rankings Love it or Hate it's Here to Stay (Room 10)	Process Automation, Safety, and Cybersecurity (Room 12)	Creative Approaches to Teaching Ethics (Room 5)
12:30PM		CIEC Awards Luncheon (Buffet, Ballroom B)			
2:00 PM		Industry Panel (Ballroom B)			
3:30 PM		Refreshment Break (Second Floor Foyer)			
4:00 PM	Enhancing Co-op Experiences and KEEN Programs (Room 6)	IP Development and Sharing by Industry and University (Room 8)	Engineering Professional Development: Past Experiences and Future Decisions (Room 10)	Integrating Industry 4.0 into Engineering Technology Curriculum II (Room 12)	OER in ET Programs (Room 5)
4:00-5:00PM		Expo Closes (Second Floor Foyer)			
4:00-5:00PM		Poster Presentation and Evaluation (Room 4)			
5:00-6:00PM		CIEC 2024 Pre-planning Meeting (Room 14)			
6:00-8:00PM	Division Hospitality (Hotel Bar)	Division Hospitality (Hotel Restaurant)	Division Hospitality (Hotel Bar)	Division Hospitality (Hotel Restaurant)	
Friday, February 10					
7:00 AM		Corporate Networking 101			
7:30AM		CIPD Planning Meeting (Hotel Lobby)			
9:00 AM	Aligning Career Education and ABET Student Learning Outcomes; Impact of Service-learning Projects on Students' Co-op and Full-time Job Search (Room 6)		CPDD Special Interest Group Roundtable and Planning Session (Room 10)	How to Prepare Students to the "New Industry": Challenges, Methods, and Implementation (Room 12)	Metaverse (Room 5)
10:30AM	CEED Industry Tour (10:45AM-1PM)		JET Board Meeting (Room 12)	Industry Informed Curricular Development in Engineering Technology II (Room 5)	
12:00 PM		CIEC 2023 Conference Concludes			



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Marine Engineering Technology



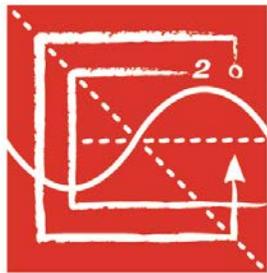
## CIEC 2023 USES THE CONFERENCE APP SWAPCARD



Registered attendees will receive an email with information about accessing the conference programs online.

**We thank the following organizations  
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We thank the following CIEC 2023 exhibitors!



**NC STATE**

Engineering

MONDAY, FEBRUARY 6, 2023

## PRE-CONFERENCE EVENTS

3:00-5:00 PM CIEC 101: CIEC Executive Board Meeting	Room 7
5:00 - 5:45 PM CIEC 111: CIEC Management Team Meeting	Room 7
6:00 - 8:00 PM CIEC 121: General Conference Chair Reception (by Invitation Only)	Room 13



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## PRE-CONFERENCE EVENTS

**9:30AM - 6:00PM**  
**Conference Registration**

**Registration Desk**

**8:00AM-12:00PM**

**Room 8**

**CPDD 204: CPDD Board Meeting**

The CPDD Board of Directors and invited guests will meet to discuss the business and activities of the division. (Chair: Kerri Poplar James, University of Maryland)

**12:00 - 4:00PM**

**Room 7**

**CEED 202: CEED Division Meeting**

**1:00-3:00PM**

**Room 8**

**ETD 215: Workshop - Leveraging User Experience Mapping to Solve Problems More Effectively**

Facilitators: Megan DeGuglielmo and Melissa Symanski, SIMPSON GUMPERTZ & HEGER  
Description: User Experience (UX) mapping, sometimes called Employee Experience (EX) or Customer Experience (CX), is a way to generate ideas and solve problems by (1) mapping the current state, (2) identifying the bright spots and pain points, (3) generating ideas to improve the bright spots and pain points, and (4) presenting recommendations for the future state. User Experience mapping can be used across industries to better understand your stakeholders and partner with them to improve their experience. This interactive workshop provides participants with a framework and templates for how to run mapping sessions with their stakeholders.

**5:00 - 5:45 PM**

**Room 9**

**CIEC 201: New Attendee Welcome Reception**

**6:00-9:00 PM**

**CIEC 211: Explore Engineering in Charleston - Museum Networking Dinner**

Spend the evening learning about Charleston's fascinating history while networking with your colleagues. Take a self-guided tour of the Charleston Museum and try your luck in the engineering-themed scavenger hunt! This event includes catered dinner, alcoholic and non-alcoholic drinks, and private bus transportation to and from the museum.



# 2023 SYMPOSIUM

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**NORTH CAROLINA AGRICULTURAL  
AND TECHNICAL STATE UNIVERSITY**

*THE GRADUATE COLLEGE*

**WEDNESDAY, FEBRUARY 8, 2023**

**7:00-8:45AM  
Breakfast at Hotel**

**7:30AM – 5:00PM  
Conference Registration**

**Registration Desk**

**8:00-8:45AM  
Parallel Division Business Meetings**

**CEED 302: CEED Business Meeting  
CIPD 303: CIPD Business Meeting  
CPDD 304: CPDD Business Meeting  
ETD 305: ETD Business Meeting**

**Room 6  
Room 8  
Room 10  
Room 12**

**9:00-10:30AM  
CIEC 301: Plenary Session**

**Ballroom B**

**The Role of Grand Challenges in the Recharging, Innovating, and Shaping Engineering Education**

Plenary Speaker: Gregory Washington, President, George Mason University  
Moderator: Aixi Zhou, General Conference Chair, North Carolina A&T State University

A host of organizations have identified global grand challenges with a focus on improving and sustaining life on the planet. This talk identifies and classifies these challenges into level one and level two grand challenges. Level one challenges have the potential to cause significant loss of life and level two challenges can be disruptive to our way of life. It then connects these challenges to the future of work with a primary connection to engineering education. From the perspective of solutions, it highlights a partnership approach which requires significant knowledge, learning, and innovation, relative to the collaboration of diverse discipline experts, scientists, engineers, business professionals, suppliers, and other partners in the design, development, and implementation of scalable solutions to these highly complex problems.

**10:30AM  
CIEC 311: Expo and Poster Open**

**Second Floor Foyer and Room 4**

**10:30-11:00AM  
CIEC 321: Refreshment Break**

**Second Floor Foyer**

**11:00AM-12:30PM**  
**Parallel Division Sessions**

**CEED 312**

**Room 6**

**Bridging Neurodiverse STEM Student Success from Classroom To Boardroom**

This session explores how to bridge neurodiverse STEM student success from classroom to boardroom equally benefiting both employees and employers.

Moderator: Sandra Leon-Barth, University of Central Florida

Presenters:

Nadia Ibrahim-Taney, University of Cincinnati

Liz Pawley, University of Cincinnati

**CIPD 313**

**Room 8**

**Structuring Win/Win Partnerships in Industry-Academia Engagements**

Building partnerships between university and industry is no magic; it takes hard work, understanding each other's needs and constraints to build, nurture and grow partnerships. Four panelists representing universities, industries and government will share their experiences and discuss how to structure partnerships that benefit both university and industry

Session Chair: Magdalini Lagoudas, Texas A&M University

Panelists:

Mary Pilotte, Purdue University

Shannon O'Donnell, Siemens

Ron Madler, Embry Riddle Aeronautical University

**CPDD 314**

**Room 10**

**Serving Employers and Students with Customer Focused Programs**

Moderator: Matthew Carver, Iowa State University

**Developing Non-Credit and Credit Opportunities for Student and Employer Success**

As the needs of engineering and technical education have changed to meet different learner audiences and platforms, institutions have also become more efficient in how learning experiences are developed to meet multiple audiences and different modalities. In this session, we introduce several practices and share tactical advice on developing programs for learners in multiple audiences while maximizing factors such as faculty time and managing costs.

Presenter: Octavio Heredia, Arizona State University

**The Reverse Pitch -Listening to Your Customers**

Universities and researchers are familiar with giving a pitch to a company or federal agency. This is how we sell our ideas and get funding for students and projects. How often though do we take time to listen? The reverse pitch is an exercise in structured listening where the roles are reversed. Rather than a group of researchers or project managers pitching ideas they hope to get funded, business and industry are pitching their needs for workforce skills and expertise to the university. This session will discuss the mechanics and advantages of this approach to serving our “industry customers.”

Presenter: Eugene Rutz, University of Cincinnati

**ETD 315**

**Room 12**

**Mini-Grants Revealed**

Every two years, the Engineering Technology Division solicits proposals for mini-grants, matching grants that help fund projects beneficial to the larger engineering technology educational community. This session features a brief explanation of the grant process (application, evaluation, and awards) and presentations by awardees of the last two cycles. Engineering technology educators should benefit by discovering a new outlet for seed money and learning about innovative, creative teaching practices and research.

Moderator: Marilyn A. Dyrud, Oregon Institute of Technology

Panelists:

Marilyn A. Dyrud, Oregon Institute of Technology

Hadi Alasti, Purdue University Fort Wayne

Maurizio Manzo, University of North Texas

T. Sean Tavares, University of New Hampshire

Paul McPherson, Purdue University

Margaret Phillips, Purdue University

**ETD 325**  
**ECEDTHA Meeting**

**Room 5**

**12:30-2:00PM**  
**CIEC 331: Industry-Education Networking Luncheon (Buffet)**

**Ballroom B**

**2:00-3:30PM**  
**Parallel Division Sessions**

**CEED 322**

**Room 6**

**An “Awareness Gap” to Support Student Professional Development in the Classroom**

In the discipline of engineering, the jobs of tomorrow are yet to be defined. According to the World Economic Forum in the Future of Jobs Report 2020, by 2025, 97 million new roles will emerge that are more adapted to the division of labor between humans, machines and algorithms. This poses the challenge: how do we prepare students for careers that do not yet exist? This session will explain the impact of facilitating career readiness education in engineering curriculum and attendees will be encouraged to think about applying their learnings to current teaching pedagogies.

Moderator: Angela Gorny, The University of Toledo

Presenters:

Doreen Grontkowski, University of Cincinnati

Emily Frazier, University of Cincinnati

**Perfectly Imperfect: Addressing Students’ Failures During Experiential Learning**

This session will examine results from a qualitative research study about undergraduate engineering students’ experiences with failures on co-op. The presenter will share modifications to a co-op preparation course following the conclusion of the study. Attendees will have an opportunity to (1) discuss their experiences working with students who feared/encountered failures and (2) brainstorm strategies to help students overcome failures during their experiential learning opportunity.

Moderator: Angela Gorny, The University of Toledo

Presenters:

Julie Nguyen, Suffolk University

**CIPD 323**

**Room 8**

**University-Industry Collaboration in Developing Micro-credentials for Engineering Students and Workforce**

The session introduces the current global state of micro-credentials in undergraduate and graduate engineering curriculum and for upskilling and reskilling in industry. It focuses on university-industry partnerships at a major state university that collaborates with industry and government in developing the future engineering workforce, and helps the attendees understand the landscape of micro-credentials and why the industry and academia partnerships are key for successful implementation of micro-credential-based learnings.

Session Chair: Shannon O’Donnell, Siemens

Panelists:

Christy Bozic, University of Colorado

Patricia Sullivan, New Mexico State University

Soma Chakrabarti, Ansys

**CPDD 324**

**Room 10**

**Contract to Tenure-Track - Strategies for Engaging Faculty**

The UW–Madison College of Engineering’s Office of Interdisciplinary Professional Programs supports a diverse set of instructors, ranging from tenured-track faculty with rigorous research responsibilities to contracted industry leaders with thirty-years of experience. The goal of this interactive session is to share strategies and practices to effectively engage and support the dynamic cadre of faculty and instructors who teach in our professional development programs.

Moderator: Julayne Moser, Purdue University

Speaker: Amanda Renz, University of Madison-Wisconsin

**ETD 335**

**Room 12**

**Innovation and Design through Industry Partnership**

Many engineering and technology programs have established design studio or innovation and design centers at department, college, and institution levels to foster innovation by students. This session will deal with those student projects/applied research in partnership with industry that had resulted in innovation and directly impacted regional economic development.

Moderators: Niaz Latif and Afshin Zahree, Purdue Northwest

Papers and Presentations:

Mauricio Torres and Ying Shang, Indiana Institute of Technology, “Developing an Advanced Manufacturing Course for Mechanical Engineering and Mechanical Engineering Technology B.S. Programs”

Masoud Fathizadeh, Purdue University Northwest, and M. Markovich, Living Waters for the World, “Design and Development of Water Purification System with Remote Sensing for Underprivileged Countries”

Maged Mikhail, Purdue University Northwest, “University-Industry Partnerships Enhancing Engineering Education”

Afshin Zahraee, Cheng Zhang, Chandramouli V. Chandramouli, and David Pratt, Purdue University Northwest, “Project ESCALATE: Enhancement of Students Classroom Activities in Learning and Teaching through Experiential Learning”

John L. Irwin, Michigan Technological University, “Michigan Learning and Education Advancement Program (MiLEAP) Industry Training”

**ETD 345**

**Room 5**

**Issues in STEM**

Feeding the pipeline is a consistent issue in engineering and engineering technology programs, especially considering workforce shortage in those areas. Numerous colleges and universities offer events targeting the middle and high school markets. This session focuses on several issues related to STEM, including recruitment strategies, technology trainer for faculty, and the impact of the pandemic.

Moderator: Orlando Ayala, Old Dominion University

Papers and Presentations:

Susan Scachitti, Maged B. Mikhail, and Daniel Suson, University of Dayton, Purdue University Northwest, “STEM on the Road: The Soft Side of Recruitment”

Maurizio Manzo and Huseyin Bostanci, University of North Texas, “K-12 STEM Outreach: Arduino Training for Teachers”

Sarah (Yin Yin) Tan and John L. Irwin, Michigan Technological University,” Examining the Impact of COVID-19 Pandemic on S-STEM Financially Supported Students’ Change-Readiness and Self-Efficacy”

**3:30-4:00PM**

**CIEC 341: Comfort Break**

**(Expo and Poster, Second Floor Foyer and Room 4)**

**4:00-5:30PM**

**Parallel Division Sessions**

**CEED 332**

**Room 6**

**Finding New Ways to Develop Industry Talent Pipelines**

In conjunction with the College of Engineering, Purdue’s Office of Professional Practice has developed a new, year-long continuous co-op model, titled “Learning While Working” (LWW). This provides an experience outside of a rotational co-op, allowing for fully-integrated education with high-level training and broader responsibility for students, while reducing the time to graduation. This session opens up discussion about the hurdles of finding new ways to help industry develop new pipelines.

Moderator: Mary Andrade, University of Louisville

Presenter:

Patrick Francis, Purdue University

**Enhancing Co-op Student Experience through Appreciative Advising and Peer Mentorship**

Students are emerging from the pandemic less prepared for co-op than ever. Using the Appreciative Advising (AA) framework (Bloom, Hutson, & He, 2008), participants will analyze a Peer Mentorship pilot designed to close preparation gaps for a mandatory co-op program. The interactive session will introduce AA phases, discuss Peer Mentors as a resource to enhance student preparedness, and address how faculty/practitioners can implement AA training with Peer Mentors to enhance student success.

Moderator: Mary Andrade, University of Louisville

Presenter:

Chris Cooper, University of Cincinnati

**CIPD 333**

**Room 8**

**Models and Frameworks for College-Industry-Government Partnerships in Industry 4.0 Engineering Workforce Development**

Industry 4.0 ready engineering workforce development models and frameworks require a holistic approach and often a multi-sector partnership where government is also a stakeholder besides industry and academia. Using examples from manufacturing, engineering and technology, the panelists will delve into different partnership frameworks and engage in conversations with the audience.

Session Chair: Erin Hostetler, Pennsylvania State University

Panelists:

John Bau, Quinnipiac University

Jacquelynn Garofano, Connecticut Center for Advanced Technology, Inc.

Scott Walston, Boeing

David Labyak, Michigan Technological University

**CPDD 334**

**Room 10**

**Post-COVID Technology: Paradigm Shift or Pendulum Swing**

At the time of the COVID-19 Pandemic outbreak, Our University's educational models swung from a face-to-face model to a fully online model. Some online materials and processes were already in place but many were not. As we all migrate back to our brick-n-mortar core business models, the Pendulum that swung so fast to fully online will be returning. We need to make sure that we don't throw away high quality products in our efforts to re-engage with our face-to-face audience. We intend to discuss a variety of topics and how the University of Maryland's Engineering School addressed its pendulum.

Topics to be discussed include Videos and Simulations, Flipped Classes, Online Faculty/Student contact, Academic Integrity, LMS usage, Classroom technology design, and Mental Health.

Moderator: Kerri Poplar Jame, University of Maryland

Presenters:

Kevin M. Calabro, University of Maryland

Marty Ronning, University of Maryland

**ETD 355**

**Room 12**

**Developing Workforce for the Blue Economy: Marine Engineering Technology Programs**

The concept of an interconnected ocean economy, otherwise known as "Blue Economy," is gaining traction among government, industry, and nonprofit sectors as an organizing principle that captures the interplay between economic, social, political, and ecological sustainability of the ocean. Forty percent of the global population lives within 150 kilometers of the coast. Global economy is closely connected with the Blue

Economy with 90% of the world's goods being traded across the ocean and much of the food and energy security of tomorrow depending on ocean-related activities. The 2021 blockage of the Suez Canal by a gigantic ship is an example of the dependence of the global trade and blue economy on a trained workforce. With the growth of global trade, and highly automated ships of today, the workforce needs for the marine and maritime industry has seen explosive growth. This session brings together faculty and industry personnel to discuss this growth in job market and what institutions are doing to address this need.

Moderator: Alok Verma, Texas A&M, Galveston

Papers and Presentations:

Keir Moorhead and David Satterwhite, California State University Maritime Academy, "Influence of Standards of Training, Certification and Watchkeeping (STCW) Standards on Marine Engineering Technology Curriculum"

Athula Kulatunga and Ajith Wijenake, Purdue University Northwest, "Power Electronic Skills for Electric Powertrain for Marine Propulsion"

Alok Verma, Texas A&M University at Galveston, Development of Electro-Technical Officer's Program to Meet Future Workforce Needs"

**ETD 365**

**Room 5**

### **Industry Informed Curricular Development in Engineering Technology I**

Engineering technology programs thrive on industry interaction through capstone projects, industrial advisory boards, faculty internships, and many other opportunities. This session will explore how those interactions have informed the development and improvement of engineering technology curricula—overall or in specific course activities.

Moderator: Angie Hill Price, Texas A&M University

Papers and Presentations:

Sabah Abro and Ken Cook, Lawrence Technological University, "Industrial-Style, Multi-Discipline Senior Project"

Adam Carlton Lynch, Wichita State University, and Vatsal Kamleshbhai Maru, University of Texas at Dallas, "Student Outcomes: Improved by the External Assessments?"

Nancy Sundheim and Jungwon Ahn, St. Cloud State University, "Multiple Avenues for Industry Input"

Gregory Lyman and Jeffery Wilcox, Central Washington University, "Implementing Renovated Robotics Platforms in Engineering Technology Laboratories"

Maged B. Mikhail and Hassan S. Hayajneh, Purdue University Northwest, "Innovation and Design in Academic Work through Industry Partnership"

**4:30-6:00PM**

**Room 14**

**ETD 375: ETD Board Meeting**

**6:00-8:00PM**

**First Floor Ballroom Foyer**

**CIEC 351: CIEC Opening Reception**

**THURSDAY, FEBRUARY 9, 2023**

**7:00-8:45AM  
Breakfast at Hotel**

**7:30 am - Noon  
Conference Registration**

**Registration Desk**

**8:00-8:45AM  
Parallel Division Business Meetings**

**CEED 402: CEED Business Meeting  
CIPD 403: CIPD Business Meeting  
CPDD 404: CPDD Business Meeting  
ETD 405: ETD Business Meeting**

**Room 6  
Room 8  
Room 10  
Room 12**

**9:00AM  
CIEC 401: Expo and Poster Open  
(Second Floor Foyer and Room 4)**

**9:00-10:30AM  
Parallel Division Sessions**

**CEED 412**

**Room 6**

**Preparing Students for Experiential Education - Applying and interviewing as well as successful performance in the workplace**

This session will discuss what industry leaders look for in co-op and internship candidates and what makes a successful co-op or internship placement experience that will likely lead to permanent placement upon graduation.

Moderators: Sandra English, North Carolina Central University School of Law

Presenters:

Aaliyah Brown, Rockwell Automation

**CIPD 413**

**Room 8**

**Collaboration Between Academia and Industry on Curricular Materials and Experiential Learning**

This session will feature lessons learned and best practices from three panelists from three different parts of the world on university-industry and university-government partnerships for curricular development and experiential learnings and will aim to find commonalities among those through partners' experiences and outcomes. The outcomes in each of the panelists' organizations benefitted both sides and implemented stronger curricular models that laid the foundations for further developments.

Session Chair: Kaitlin Tyler, Ansys

Panelists:

Hamed Hadhrami, Petroleum Development Oman

Magdalini Lagoudas, Texas A&M University

Patricia Caratozzolo, Tecnologico de Monterrey

CPDD 414

Room 10

**Cracking the Covid Workforce Dilemma - Repurposing a novel capstone design approach to accelerate and innovate employee orientation and onboarding**

Globally, industry is ramping back up after the Covid shut down. The anticipated large number of retirements associated with the Baby Boom generation, in combination with unplanned exits due to a “covid reset” has left industrial firms in dire straits. Concurrently, engineering students graduating from colleges and universities have endured nearly two years of remote and socially distanced education. The impact of losing authentic, hands-on experience to build competency and confidence in new graduates is just now being uncovered. This paper will present a qualitative case-study methodology to share how the TVS Motor Company (INDIA) partnering with the Fusion Studio for Entertainment & Engineering (FSEE - Purdue University), endeavored to tackle and innovate through this difficulty, utilizing an intentionally open-ended, collaborative, and “value infused” capstone design model in the industrial setting of new associate onboarding.

Moderator: Linda Krute, North Carolina State University

Speakers:

Dr. Mary Pilotte, Purdue University, Rich Dionne, Purdue University  
V Kovaichelvan, TVS Motors INDIA

ETD 415

Room 12

**Integrating Industry 4.0 into Engineering Technology Curriculum I**

Industry 4.0 is the 4th industrial revolution that was proposed to take advantage of the advanced microelectronics systems. Recent technological developments in communication systems also contributed to the growth of the internet connectivity in industrial sector. For this reason, educational institutions have started to modify and adopt their curricula in order to respond to this demand. This session aims to provide a forum for discussion that will attract scholars and industry practitioners for discussing the latest advances in integrating Industry 4.0 into the engineering technology curricula. The participants will also have a chance to share their experiences and provide feedback to existing practices.

Moderators: Reza Abrishambaf and Mert Bal, Miami University Ohio

Papers and Presentations:

Gary Mullett, Springfield Technical Community College, “Modifying Engineering Technology Curriculum to Adapt to the Demands of Industry 4.0”

Hiren Gami, Miami University, “A Laboratory Exercise to Make a Smart Robot ARM Using Machine Learning”

Marilyn Barger, FloridaMakes and FLATE, and Richard Gilbert, University of South Florida, “Industry 4.0 Technology Skill Expectation Integration into Engineering Technology Technical Workforce”

Zhiyuan Yu and Gary Drigel, Miami University, “Digitized Teaching Lab Development for Comprehensive Materials Testing System”

Eli Westbay, Isaiah Storey, Francis Nkrumah Jr., Mert Bal, and Reza Abrishambaf, Miami University Regionals, "Design of an Autonomous Shop Floor Robot (GOFr) with ROS"

**ETD 425**

**Room 5**

**Engineering Technology National Forum**

The purpose of the Engineering Technology National Forum is to help engineering technology programs across the country to enhance their ability to produce highly-qualified applied engineering talent for the future. This is to be done by identifying and pursuing activities and projects that are believed to make the largest positive impact on programs and on the graduates being educated for future technical positions. To institutionalize this effort, the Engineering Technology Council established the National Forum as a standing subcommittee for the purpose of directing a continuing effort toward these goals. This session will provide an update on the actions of previous and on-going activities, and more important, will brainstorm with attendees on appropriate future activities to be undertaken.

Moderator: Ron Land, Pennsylvania State University

**10:30-11:00AM**

**CIEC 411: Refreshment Break  
(Second Floor Hallway and Room 4)**

**11:00AM-12:30PM: Parallel Sessions**

**CEED 422**

**Room 6**

**Diversity and Innovation in Engineering**

This session will discuss Engineering experiential education experiences as key factors in identity formation, attaining internship and co-op success, and persistence for first-generation, under-represented minorities, women, and those with financial need. In this session participants will be lead through a high-point experiences activity which was instrumental in their own professional identity formation.

Moderator: Julie Nguyen, Suffolk University

Presenters:

Robin Hammond, Arizona State University

**Women in Engineering, Diversity in Engineering and the Importance of Innovation in Engineering.**

This session will discuss recruitment for women and under-represented minorities in engineering and its impact on experiential education as well as the effects of innovation on experiential education.

Moderator: Julie Nguyen, Suffolk University

Presenters:

Anette Karlsson, Embry Riddle

Liesl Folks, University of Arizona

**CIPD 423**

**Room 8**

**University-Industry Collaboration for Capstone Design Projects**

Session Chair: David Schmueser, Clemson University

Capstone projects at the engineering schools in cooperation and collaboration with local, regional and national industries allow both industry and academia to know about each other's needs and expectations and prepare the students for the workforce. The collaborated projects often benefit both as well as the students and give the students an opportunity to connect the dots among all their learnings and extend the application to the industrial settings. This session will focus on the best practices in such collaborations and discuss the lessons learned in some of those.

Moderator: David Schmueser, Clemson University

Presenters:

Kaitlin Tyler, Ansys

Keith Stanfill, University of Tennessee

Shayne McConomy, Florida State University

Amit Deshpande, Clemson University International Center for Automotive Research

**CPDD 424**

**Room 10**

**US News Rankings Love it or Hate it's Here to Stay**

This session will focus on U.S. News and World Report Best Online Graduate Engineering Programs. The focus will be how metrics on key data points, including graduation rate, retention rate, faculty credentials, technological infrastructure, and student services, can be used to make specific and measurable program improvements, and, furthermore, how tracking performance year to year and comparing it to peer institutions can ensure the best student enrollment, engagement, and retention experience.

Moderator: Tamra Swann, Mississippi State University

Speakers:

Vinette Brown-Darlington, University of Maryland

Heather G. Markle, University of Maryland

**ETD 435**

**Room 12**

**Process Automation, Safety, and Cybersecurity**

This session explores the following topics in these technical areas: curriculum development and implementation, capstone projects, the interface between process automation, safety and cybersecurity, software, and hardware tools: applications and new developments, and collaborative projects with industry.

Moderator: Vassilios Tzouanas, University of Houston—Downtown

Papers and Presentations:

Mark Carrigan and Chad Elmendorf, Hexagon, “Process Automation, Safety and Cybersecurity”

Enrique Barbieri, Burak Basaran, Driss Benhaddou, Navdeep Singh, University of Houston, Vassilios Tzouanas, University of Houston, Downtown, and Balan Venkatesh, University of Houston, “Teaching Applied Mathematics in ET to Increase Student Engagement & Success in Engineering”

Michael Norris, Lyondell Chemical Company, “Building an OT Cyber Security Organization”

**ETD 445**

**Room 5**

**Creative Approaches to Teaching Ethics**

For the past two decades, ABET has required ethics and professionalism as one objective of student outcomes. Since that time, engineering ethics classes have mushroomed in most engineering and technology programs. This session will focus on integrating ethics into technical courses in a creative way, which includes content and methodology.

Moderator: Marilyn A. Dyrud, Oregon Institute of Technology

Papers and Presentations:

Rebeca G. Book, Pittsburg State University, “Resources and Methods to Incorporate Ethics into Curriculum”

Maddumage Karunaratne and Christopher Gabany, University of Pittsburgh at Johnstown, “Teaching Ethics to Meet Comprehensive ABET Requirements”

Marilyn A. Dyrud, Oregon Institute of Technology, “History Matters: Engineering Ethics through an Historical Prism”

**12:30-2:00PM**

**Ballroom B**

**CIEC 421: CIEC Awards Luncheon (Buffet)**

**2:00-3:30 PM**

**Ballroom B**

**CIEC 431: Industry Panel**

The Plenary Industry Panel features a diverse group of industry leaders discussing best practices in industry and education collaboration from the industry perspective.

Moderator: Ed Borbely, University of Wisconsin Madison

Panelists:

Kenneth Hurt, VP of Engineering for Next Generation Avionics, Honeywell Aerospace  
Megan DeGuglielmo, Director of Talent Development, Simpson Gumpertz & Heger, Inc. (SGH)

Micheal Watkins, Founder/CEO and Managing Partner WACA Services

Dora Smith, Senior Director, Global Academic Program, Siemens Digital Industries Software

Dan Vornhagen, Lead for Pre-Construction (and Director of Co-Op Education), Danis (and ASEE Takacs award winner)

**3:30-4:00PM**

**Second Floor Foyer and Room 4**

**CIEC 441: Refreshment Break, Expo and Poster**

**4:00PM**

**Expo Closes**

**4:00-5:00PM**

**Room 4**

**CIEC 451: Poster Presentation and Evaluation**

**4:00-5:30PM**

**Parallel Division Sessions**

**CEED 432**

**Room 6**

**Enhancing Co-op Experiences and KEEN Programs**

**Co-op and Entrepreneurial Minded Learning Best Practices (KEEN)**

As a KEEN School, the University of Toledo is researching what the training and preparation for students who will begin or work in a co-op experiences looks like, specifically with a lens on Entrepreneurial Minded Learning (EML). We will present a brief summary of findings from a survey on this topic, and discuss in the interactive session some potential best practices learned from our respondents. We will discuss these issues from the perspective of all involved, including students, career educators, and industry partners. Participants should be able to take home specific ideas and items to integrate into their own circumstances and curriculums, as well as gain insight into future resources being developed that UToledo will share out publicly. These should include ideas and processes for pre-, during and post-co-op interactions and teachings with students, and interactions with employers to be maintained and optimized over time.

**THURSDAY, FEBRUARY 9, 2023**

Moderator: Sandra Leon-Barth, University of Central Florida

Presenters:

Angela Gorny, The University of Toledo

Matt Franchetti, The University of Toledo

### **Preparing First-Generation Students to be Internship-Ready Using a KEEN Framework**

Employers who seek to diversify their engineering talent pool often lament that the lack of projects or technical skills on a resume prevent them from advancing promising candidates through applicant tracking systems. At Arizona State University, KEEN models have been integrated with ABET standards to help develop innovative programs to prepare engineers for the future of work. The Engineering Futures Scholars program, funded by an NSF S-STEM grant, supports students who are first-generation-to-university, under-represented minorities, women, and those with financial need to persist in engineering and enter the engineering profession. Participants engage in academic and career support structures that prepare them to be successful candidates for internships and jobs. A “Creating Value” project and subsequent KEEN-informed activities are high-impact practices that we employ. We have found that the “Creating Value” project offers students both personal and social relevance for engineering, an important factor in developing their engineering identity. In this interactive session we will present these activities that can be adopted by other universities seeking to improve the career readiness of diverse populations.

Moderator: Sandra Leon-Barth, University of Central Florida

Papers and Presenters:

Tirupalavanam G. Ganesh, Arizona State University

Robin Hammond, Arizona State University

James Collofello, Arizona State University

Kyle Squires, Arizona State University

**CIPD 433**

**Room 8**

### **IP Development and Sharing by University and Industry**

This session will feature expertise from both industries and universities. Experts from industries will discuss the models they are using to collaborate on Intellectual Property (IP) issues with universities and experts from universities will do the same. Advice will be provided on how best to collaborate on IP issues arising from senior design projects and sponsored research.

Session Chair: Mahesh Aggarwal, Gannon University

Panelists:

Arturo Pizano, Siemens

Howard Appelman, Boeing

Ranji Vaidyanathan, Oklahoma State University

Ed Borbely, University of Wisconsin Madison

CPDD 434

Room 10

**Engineering Professional Development: Past Experiences and Future Decisions**

Moderator: Marty Ronning, University of Maryland

**A Fork in the Road: Engineering Returners' Plans to Stay with or Change Employers after the master's degree**

Returner graduate engineering students are those who have had more than five years' experience in the field, as opposed to direct pathway, those engineers who go to graduate school less than five years from when they completed their undergraduate degree. Direct pathway students do not change disciplines readily and say that "the life of an engineer" is one of the important reasons they go to graduate school. On the other hand, engineers with five or more years of experience in industry who decide to go to graduate school have been shown to change disciplines. Sometimes this means the returner plans to leave their current workplace. However, this cultural and industry knowledge is useful and vital to the employer. Ways of retaining and understanding the needs of the returner graduate engineering student are discussed, and a reframing of the needs of the returner are reframed to retain these workers. How can the employer maintain the relationship with and retain the engineer?

Speakers:

Elizabeth Gross, Sam Houston State University

Diane Peters, Kettering

**Development of Work-related Experience Instrument (CPDWRES) for Continuing Professional Development Learners**

The purpose of this article is to describe the development and validation of a multidimensional scale to assess the work-related experience and engagement of adult learners in continuing professional development (CPD) courses. Malcolm Knowles' theory of adult learning shows the significant influence of self-concept and learner's experience in adult education. Additionally, there is broad evidence of the importance of engagement in learning settings. However, scales do not exist to evaluating learners' experience and engagement in CPD settings. We utilized established methodologies in scale development to develop and implement the Continuing Professional Development Work-Related Experience Scale (CPDWRES), which includes five dimensions, Experience-centered, Application of learning to the work, Professional Outcome, Learning Environment, and Engagement. We interviewed four engineering practitioners involved in CEPD courses by using qualitative methods to validate the survey questions. The research survey data was gathered from 200 engineering practitioners taking continuing engineering professional development (CEPD) courses at five synchronous courses in a workforce development institute. This research highlights the importance of work-related experiences as a useful tool for developing CPD courses. The results showed the initial evidence that the CPDWRES will be useful to both researchers and educators in understanding application of work experience and engagement in CPD settings.

Speaker: Shane A. Brown, Oregon State University

**ETD 455**

**Room 12**

**OER in ET Programs**

Recent studies showed adoption of Open Educational Resources (OER) is helping student success particularly for underserved students. OER are learning, teaching, and research materials that reside in the public domain or are under copyright that has been released under an open license that permits no-cost access, re-use, re-purpose, adaption, and redistribution by others. Redesigning courses using OER provides faculty an opportunity to include more course content and educational materials that are culturally responsive, inclusive, focused on equity and social justice. This session focuses on OER-based pedagogical transformation in ET programs.

Moderator: Moin Uddin, East Tennessee State University

Papers and Presentations:

Mohammad Moin Uddin, Keith Johnson, and Craig Leendert, East Tennessee State University, "CAD OER - Equity in Access for Engineering/Engineering Tech Students"

Xiaojing Yuan, University of Houston, "Opportunities and Challenges in Creating, Adapting, & Adopting OER Material in ET Programs"

**ETD 465**

**Room 5**

**Integrating Industry 4.0 into Engineering Technology Curriculum II**

Industry 4.0 is the 4th industrial revolution that was proposed to take advantage of the advanced microelectronics systems. Recent technological developments in communication systems also contributed to the growth of the internet connectivity in industrial sector. For this reason, educational institutions have started to modify and adopt their curricula in order to respond to this demand. This session aims to provide a forum for discussion that will attract scholars and industry practitioners for discussing the latest advances in integrating Industry 4.0 into the engineering technology curricula. The participants will also have a chance to share their experiences and provide feedback to existing practices.

Moderators: Reza Abrishambaf and Mert Bal, Miami University Ohio

Papers and Presentations:

Saxon Ryan, Iowa State University, "Assessing the Current State of Industry 4.0 for Industry and Academics: Survey Development Challenges and Lessons Learned"

Hiren Gami, Miami University, "An Online Course Development of Embedded Systems using Industry Standard ARM Controllers"

Benjamin Gaston, Midlands Technical College, Ramy Harik, University of South Carolina, Luis H. Alva, Midlands Technical College, and Jesse Warren, Factory Systems, "Development of a Classroom Dedicated to Teaching Smart Manufacturing Principles"

Mert Bal and Reza Abrishambaf, Miami University Regionals, "Real-Time Interactive Virtual Reality Simulation System to Enhance Remote Delivery of Laboratory Courses in Engineering Technology"

Ulan Dakeev, Lain Sowell, Louanne Mozer, and Breanna Camario, Sam Houston State University, "Development of Virtual Reality Robotics Laboratory Simulation"

**5:00-6:00PM**

**Room 14**

**CIEC 461: 2024 Pre-planning Meeting**

**6:00-8:00PM**

**Parallel Division Activities**

**CEED 442**

**Bar Area**

**CEED Division Hospitality**

**CIPD 443**

**Hotel Restaurant**

**CIPD Division Hospitality**

**CPDD 444**

**Bar Area**

**CPDD Division Hospitality:** Join fellow CPDD members in the Hotel Bar to visit after a full day of meetings or to make plans for dinner. There are a limited number of restaurants within walking distance, but more adventurous groups may want to make plans for venturing into town.

**ETD 475**

**Hotel Restaurant**

**ETD Division Hospitality**

**FRIDAY, FEBRUARY 10, 2023**

**7:00-8:45AM**  
**Breakfast at Hotel**

**8:00-10:00AM**  
**Conference Registration**

**Registration Desk**

**7:00AM-2:00PM**  
**CIEC 501: Corporate Networking 101**

**7:30-10:30AM**  
**CIPD 503: CIPD Planning Meeting**

**Hotel Lobby**

**10:45AM-1PM**  
**CEED 502: Industry Tour**

*Pre-badging is required. Participants will convene at the Hotel main entrance at 10:45AM for departure at 11:00AM. Tour is 11:15AM - 1PM.*

CEED is offering attendees a chance at a behind the scenes tour of the Boeing facilities, information on internship/co-op and career opportunities and an insight Boeing's impact on industry in South Carolina and across the globe. Wear comfortable shoes as the Boeing campus is large and some walking is required.

**9:00-10:30AM**  
**Parallel Division Sessions**

**CEED 512**

**Room 6**

**Aligning Career Education and ABET Student Learning Outcomes**

The University of Cincinnati evaluated its co-op assessment processes to align data to newly created career education student learning outcomes and the ABET student learning outcomes. This presentation will outline the process implemented to redesign our co-op student and supervisor evaluations to account for student learning outcomes outlined by the institution and national stakeholders. The presentation will also engage participants on how they evaluate student success for career readiness.

Moderator: Angela Gorny, The University of Toledo

Presenter: Richard Robles, University of Cincinnati

**Impact of Service-learning Projects on Students' Co-op and Full-time Job Search**

Service-learning (S-L) can be considered a form of experiential learning. What impact does this experience have on students securing a co-op or full-time position? This presentation will provide an overview of service-learning, discuss the skills that students bring to and learn from a community partner, and review the traits that can lead to a

successful partnership. The speaker will then transition to how this experience impacts a student's job search including providing results and analysis of a survey completed by S-L students.

Moderator: Angela Gorny, The University of Toledo

Presenter: John Bleakney, Northeastern University

**9:00AM to 12:00PM**

**Room 10**

**CPDD 504 Special Interest Group Roundtable and Planning Session**

Take a few moments and enjoy breakfast at the hotel before joining us at 9 a.m. for our annual Special Interest Group (SIGs) meeting. Networking with peers is the most important benefit of attending CIEC, according to our CPDD colleagues. Our SIGs include Administration, Delivery, Faculty, Industry, International and Marketing. This session will be the capstone of our conference sessions, with the opportunity for all to discuss programs, questions, concerns, and general engineering education issues and trends. This session also helps generate topics for next year's CPDD track during the 2024 conference. This year we'll take a moment and look at a survey regarding "Who is CPDD?" and discuss marketing options for growing the division.

Coordinator: Tamra Hannon Swann, Mississippi State University

**ETD 505**

**Room 12**

**How to Prepare Students to the "New Industry": Challenges, Methods, and Implementation**

Nowadays, different industries have implemented a digital twin (a replica) of jet engines, cars, and wind farms. These replicas can be used to emulate the processes, collect data, and predict how they will perform in the real environment. The purpose is simple: prevent any type of failures that may be costly and the delivery of a better product. The digital twin concept includes Internet of things, artificial intelligence, and software; classic mechanical engineering and technology programs don't include many of these aspects.

Moderator: Maurizio Manzo, University of North Texas

Papers and Presentations:

Teddy Ivanitzki, Rashida Johnson, and Ashok Agrawal, ASEE, "Expand Underrepresented Participation in High-Tech Start-Ups"

Saeed Foroudastan, Middle Tennessee State University, "Solar Splash Challenge Applies Hands-On Engineering Experience with Sustainable Energy and Energy Management"

**ETD 515**

**Room 5**

**Metaverse**

This session will focus on using the “Metaverse” (virtual and augmented reality) in engineering technology to build student efficacy, persistence, retention, and graduation, particularly within the URMs. The goal is to continue the growth, diversity, and resiliency of the ET pipeline and profession. Augusta Technical College is currently doing a work-in-progress utilizing the VR/AR technology.

Moderator: Kim Gaines, Augusta Technical College

Papers and Presentations:

Kim Gaines, Shirley Walker, and Caleb Allen, Augusta Technical College, “VARIETY: Using Virtual and Augmented Reality in Engineering Technology to Improve Academic Success of African American Males and Females in Engineering Technology Programs at Augusta Technical College”.

**10:30AM-12:00PM  
Parallel Sessions**

**ETD 535**

**JET Board Meeting**

**Room 12**

**ETD 545**

**Room 5**

**Industry Informed Curricular Development in Engineering Technology II**

Engineering technology programs thrive on industry interaction through capstone projects, industrial advisory boards, faculty internships, and many other opportunities. This session will explore how those interactions have informed the development and improvement of engineering technology curricula—overall or in specific course activities.

Moderator: Angie Hill Price, Texas A&M University

Papers and Presentations:

Mohsen Azizi, New Jersey Institute of Technology, “Industry Informed Curriculum Development in Engineering Technology: Solar PV Planning and Installation”

Matthew Louis Schnell, Kathyryne A. Newton, Purdue University, “Smart Manufacturing Enterprise Curriculum Development: Financial Analysis for Smart Manufacturing Opportunities”

Michael Markovich and Masoud Fathizadeh, Purdue University Northwest, “Living Waters for the World Telemetry System for Water Purification”

James Kribs, North Carolina A&T State University, “Can Students Assess Their Own Skill Levels? Student Self Confidence Scores in Experimental Methods”

**12:00 PM**

**CIEC 2023 Conference Concludes**







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