ASEE 2022 ANNUAL CONFERENCE

Excellence Through DIVERSITY

JUNE 26 – 29, 2022 | MINNEAPOLIS, MN

Scan to view full PDF program
Meet your McGraw Hill Team at Booth #726:
- One-on-One Consultations
- Live Demonstrations
- Exciting Giveaways

Tuesday, June 28, 2022
8:00AM – 9:30AM | Room 101B
Panel Discussion: Shifting Expectations for Engineering Education in a Post-2020 World – Student and Faculty Perspectives

Join McGraw Hill and ASEE's Student Division for an interactive panel discussion where faculty members and students discuss how their expectations have changed as a result of the pandemic.

It's no secret that 2020 upended and challenged most of the practices we were accustomed to following. Now that we're returning to some semblance of normalcy, how do we evolve to incorporate the ideal blend of older and newer approaches? This discussion will cover everything from mental health concerns to classroom management, as well as the tension between preserving the inclusion of empathy and humanity in Engineering education without unduly burdening faculty or encouraging students to take advantage of flexible policies. Get ready to tackle tough topics and to provide your own opinions and solutions!

Wednesday, June 29, 2022
8:00AM – 9:30AM | Room 101B
Panel Discussion: What eResources would help your students learn mechanics?

Join McGraw Hill and Engineering Mechanics faculty for a discussion on how eResources can be used to help advance student learning. What does the engagement need to look like and how does that impact the cost-benefit analysis on an instructor's time? How could automated tools be used to accomplish the following?

- Create more student engagement
- Make difficult topics accessible to students by providing practice opportunities
- Free-up some of the instructor's time to spend helping students

Access Engineering
Trusted engineering content with new site updates that optimize learning and teaching
Accessengineeringlibrary.com

Find out how to improve student results with adaptive-learning tools
mheducation.com/highered/engineering-computer-science

McGraw Hill has a long history with ASEE and is proud to continue sponsorship of two prominent awards: The James H McGraw Award, and the ASEE Mechanics Division Beer & Johnston New Educators Award recognizing outstanding service in Engineering Technology education. Congratulations to all past recipients! We look forward to honoring this year’s recipients in person.

For up-to-date information about what's happening at ASEE, follow us on Twitter @mhengineering
A heartfelt welcome to our first in-person meeting in two years! I’ve attended a number of ASEE regional and council/institute meetings this spring and can tell you that the ASEE conference team “still have it.” Their careful planning and organization enabled us to hold safe and highly meaningful meetings. At recent in-person convenings, ASEE members have rekindled friendships, shared exciting ideas, and engaged in dynamic discussions about engineering education. This Annual Conference will no doubt do the same.

This year, we are gathering in a metropolis that brought into focus the nation’s undercurrents of racism and systems that frame our society. We watched the typical strategies play out (discredit the victim, point to special circumstances), but ultimately the truth prevailed, and the gossamer screen was lifted from many eyes. As engineers and engineering educators united to advance innovation, excellence, and access at all levels of education for the engineering profession with the values of excellence, engagement, innovation, integrity, diversity, and inclusion, we can use this location and this unique time in history—emerging from a global pandemic and grappling with a societal reckoning—to intentionally acknowledge our systems and practices within engineering. Do these systems and practices equally benefit everyone? Do they fully promote excellence, engagement, innovation, integrity, diversity, and inclusion? If not, what can each of us do from our realm of influence to push the systems and practices forward for a better future?

This conference enables each of us to connect with a close affinity group and then step across the hallway to engage with another affinity group. This is the value of ASEE! Innovation and excellence increase when we explore diverse ideas, approaches, and systems of knowledge.

Here’s wishing everyone a wonderful conference, reconnecting with long-time colleagues and friends while engaging and learning from a wide array of new colleagues and experts in close and more distant fields of engineering. Enjoy Minneapolis and the 2022 Annual Conference! I hope you are able to take away knowledge, tools, and skills that will advance innovation, excellence, and access at all levels of education for the engineering profession.

Best Regards,

Adrienne Minerick
ASEE President 2021-2022
# 2022 ASEE ANNUAL CONFERENCE AND EXPOSITION PROGRAM

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Iowa State University College of Engineering offers 14 undergraduate majors and more than 45 doctoral and master’s degree programs. Every day, Iowa State engineering students, faculty and staff innovate and conduct research to make the world a better place to live. We prepare engineers to be change-makers, entrepreneurs, intrapreneurs and leaders in their communities – both locally and globally.

www.engineering.iastate.edu
2022 ASEE ANNUAL CONFERENCE
BOARD OF DIRECTORS

President
Adrienne Minerick
Dean, College of Computing
Professor of Chemical Engineering
Michigan Technological University

Vice President, Member Affairs
Brian Self
Professor of Mechanical Engineering
California Polytechnic State University, San Luis Obispo

Immediate Past President
Sheryl Sorby
Professor of Engineering Education
University of Cincinnati

Vice President, Professional Interest Councils, and Chair, Professional Interest Council I
Christi Patton Luks
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Missouri University of Science and Technology

President-Elect
Jenna Carpenter
Founding Dean and Professor of Engineering
Campbell University

Vice President, Institutional Councils, and Chair, Engineering Technology Council
Martin Gordon, PE., DFE
Past-President, National Academy of Forensic Engineers, Professor and Director for External Academic Relations, College of Engineering Technology
Rochester Institute of Technology

First Vice President and Vice President, External Relations
Agnieszka Miguel
Associate Professor and Chair, Electrical and Computer Engineering
Seattle University

Chair, Engineering Research Council
Chuck Bunting
Professor
Oklahoma State University

Vice President, Finance
Teri Reed
Assistant Vice President, Office of Research
University of Cincinnati

Chair, Engineering Deans Council
Cammy Abernathy
Dean, Herbert Wertheim College of Engineering
University of Florida

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
Chair, Corporate Member Council
Dora Smith
Senior Director, Global Academic Program
Siemens Product Lifecycle Management Software Inc.

Chair, Council of Sections, Zone I
Ilya Grinberg
Professor and Coordinator of Electrical Engineering Technology
Buffalo State College, The State University of New York

Chair, Professional Interest Council I
Chell Roberts
Dean
Shiley-Marcos School of Engineering

Chair, Council of Sections, Zone II
John Brocato
Lecturer, Technical Communication, School of Chemical, Materials, and Biomedical Engineering, College of Engineering
University of Georgia

Chair, Professional Interest Council III
John K. Estell
Professor of Computer Engineering and Computer Science
Ohio Northern University

Chair, Council of Sections, Zone III
Tariq Khraishi
Professor of Mechanical Engineering and Assistant Dean for Internships, School of Engineering
University of New Mexico

Chair, Professional Interest Council IV
Beth Holloway
Assistant Dean of Diversity and Engagement, Leah H. Jamieson Director of Women in Engineering, and Assistant Professor, Mechanical Engineering (by courtesy), College of Engineering
Purdue University

Chair, Council of Sections, Zone IV
Lily Gossage
Director, Maximizing Engineering Potential, College of Engineering
California State Polytechnic University, Pomona

Chair, Professional Interest Council V
Maureen Barcic
Director of Cooperative Engineering, Swanson School of Engineering
University of Pittsburgh

Executive Director
Norman L. Fortenberry
American Society for Engineering Education
2022 ASEE ANNUAL CONFERENCE
CONFERENCE-AT-A-GLANCE

For detailed session information visit: 2022-asee.slayte.com

CENTRAL STANDARD TIME

SATURDAY, JUNE 25

8:00 A.M.

9:00 A.M.

10:00 A.M.

11:00 A.M.

12:00 P.M.

1:00 P.M.

2:00 P.M.

3:00 P.M.

4:00 P.M.

5:00 P.M.

6:00 P.M.

ASEE Finance Committee Meeting
9:00 A.M. - 12:00 P.M.

Executive Committee Meeting and Lunch
12:00 P.M. - 2:00 P.M.

ASEE Long-Range Planning
2:00 P.M. - 5:00 P.M.

Various ASEE Committee Meetings
4:00 P.M. - 5:30 P.M.

SUNDAY, JUNE 26

Registration Open - 8:00 A.M. - 7:00 P.M.

Sunday Workshops
9:00 A.M. - Noon

ASEE Board of Directors Meeting
8:00 A.M. - 3:00 P.M.

FREE TIME
Noon - 1:15 P.M.

Technical Sessions
1:15 P.M. - 2:45 P.M.

Technical Sessions
3:00 P.M. - 4:30 P.M.

Greet the Stars! New Members and First-Time Attendees Orientation
3:00 P.M. - 4:30 P.M.

Division Mixer
4:45 P.M. - 6:15 P.M.

Taste of Minneapolis
6:15 P.M. - 8:30 P.M.

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
### MONDAY, JUNE 27

- **Registration Open** - 7:00 A.M. - 5:00 P.M.
- **Exhibit Hall Open** - 5:00 P.M. - 6:30 P.M.

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<th>Time</th>
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<td><strong>Monday Plenary</strong></td>
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<tr>
<td>9:45 A.M. - 11:15 A.M.</td>
<td><strong>Technical Sessions &amp; Business Meetings</strong></td>
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<tr>
<td>1:00 P.M. - 1:45 P.M.</td>
<td><strong>FREE TIME</strong></td>
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<tr>
<td>1:45 P.M. - 3:15 P.M.</td>
<td><strong>Technical Sessions &amp; Business Meetings</strong></td>
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<tr>
<td>3:30 P.M. - 5:00 P.M.</td>
<td><strong>Interdivisional Town Hall</strong></td>
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<tr>
<td>5:00 P.M. - 6:30 P.M.</td>
<td><strong>Focus on Exhibits Welcome Reception &amp; Best Paper Nominee Poster Session</strong></td>
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### TUESDAY, JUNE 28

- **Division Business Meetings Only (Optional)** - 7:00 A.M. - 8:00 A.M.
- **Registration Open** - 8:00 A.M. - 5:00 P.M.
- **Exhibit Hall Open** - 9:45 A.M. - 6:00 P.M.

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<tr>
<th>Time</th>
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<tr>
<td>8:00 A.M. - 9:30 A.M.</td>
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<td>9:45 A.M. - 11:15 A.M.</td>
<td><strong>ASEE Fellows Breakfast</strong></td>
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<td><strong>FREE TIME</strong></td>
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<td><strong>Technical Sessions &amp; Business Meetings</strong></td>
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<td>5:15 P.M. - 6:15 P.M.</td>
<td><strong>Focus on Exhibits Summertime Social</strong></td>
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### WEDNESDAY, JUNE 29

- **Division Business Meetings Only (Optional)** - 7:00 A.M. - 8:00 A.M.
- **Registration Open** - 8:00 A.M. - 4:00 P.M.
- **Exhibit Hall Open** - 8:00 A.M. - 11:15 A.M.

<table>
<thead>
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<th>Time</th>
<th>Event Description</th>
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<tr>
<td>8:00 A.M. - 9:30 A.M.</td>
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<td>9:45 A.M. - 11:15 A.M.</td>
<td><strong>CMC Industry Day Session</strong></td>
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<tr>
<td>1:45 P.M. - 3:15 P.M.</td>
<td><strong>Distinguished Lecture Series</strong></td>
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<td>3:30 P.M. - 5:00 P.M.</td>
<td><strong>Technical Sessions &amp; Business Meetings</strong></td>
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<tr>
<td>5:00 P.M. - 6:30 P.M.</td>
<td><strong>2022/2023 ASEE Board of Directors Meeting</strong></td>
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### Registration and Exhibit Hall Hours

- **Registration Open** - 7:00 A.M. - 5:00 P.M.
- **Exhibit Hall Open** - 5:00 P.M. - 6:30 P.M.
- **Registration Open** - 8:00 A.M. - 4:00 P.M.
- **Exhibit Hall Open** - 8:00 A.M. - 11:15 A.M.
WE’RE EXCITED TO ANNOUNCE THE RETURN OF THE ASEE LIVING WALL!

Date: Sunday, June 26th - Wednesday, June 29th, 2022
Location: Exhibit Hall B&C Foyer Minneapolis Convention Center
Time: Available during registration hours

Each year at the Conference, attendees will contribute their thoughts to the wall.

The wall will be preserved and displayed from year to year, growing bigger and bigger, and serving as a historical document of our conference attendees’ insights, ruminations, and reflections.

We hope you’ll take a few moments to leave your legacy on the Living Wall. Located outside the Exhibit Hall near the Info Kiosk.

FIND US ON:  

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<td>The Marquette Hotel, Curio Collection by Hilton</td>
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Any changes must be made directly with your hotel. Please visit https://book.passkey.com/gt/218266674?gtid=60a730fe7c7da44a667e1474bd2b3db0 to view hotel phone numbers.

To book a new hotel reservation, please visit https://book.passkey.com/event/50229672/owner/761/home

For questions or special requests during event dates, please contact ConferenceDirect at 888-947-2233 or email housing@minneapolis.org.

Please note: Hotels will not be taking reservations directly for the ASEE conference. All reservations will be made through the housing bureau.
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TWO YEAR COLLEGE
MODEL DESIGN
ROBOTICS COMPETITION

POSTER SESSION

STUDENT COMPETITION AREA

TWO YEAR COLLEGE DESIGN WORK AREA

ASEE OFFICES

EXHIBIT SALES  EXHIBIT SUPPORT  DIVISION ACCOUNTING  ASEE AWARDS OFFICE  BOD OFFICE

CHILDCARE

LOUNGE

EXHIBIT HALL FLOOR PLAN

MINNEAPOLIS, MN THE MINNEAPOLIS CONVENTION CENTER
ABOUT ASEE

We are a nonprofit organization committed to furthering the full spectrum of education in engineering and engineering technology, including instruction, research, scholarship, practice, and service.

ASEE develops policies and programs that enhance professional opportunities for engineering faculty members, and promotes activities that support increased student enrollments in engineering and engineering technology colleges and universities.

Our network of institutions, corporations, and individuals is vital for developing a presence within U.S. engineering academia. Each year, hundreds of innovative corporate, government, non-profit, and educational organizations depend on ASEE to get their message out to the engineering education community.

• Founded in 1893
• The only society that spans all engineering and engineering technology disciplines
• 375 colleges (of 420 total) in US, 22 others around the globe
• About 10,000 total individual members
• 55 member interest areas
• 60 corporations, NGOs, governmental agencies
• Annual Conference

Learn More!
Visit asee.org for more information on membership offerings

https://www.asee.org/membership-and-communities/membership
PLAN YOUR ANNUAL CONFERENCE WITH THE

INTERACTIVE CONFERENCE PLANNER

Get Upcoming Highlights & Hours

Find Sessions

WWW.ASEE.ORG/CONFERENCE-PLANNER
SUNDAY, JUNE 26

• Registration Hours:
8:00 a.m. to 7:00 p.m.
Exhibit Hall B&C, Minneapolis Convention Center

• Yoga
7:00 a.m. to 7:45 a.m.
Exhibit Hall B&C Foyer, Minneapolis Convention Center

Join your friends and colleagues as we jump-start our day with a renewing stretch and meditation class! Repeats Monday, Tuesday, and Wednesday.

• Greet the Stars!
New Members & First Timers Orientation
3:00 p.m. to 4:30 p.m.
Ballroom B, Minneapolis Convention Center
Come hear what ASEE membership and the Annual Conference are all about. New members as of January 1, 2022, and first time Annual Conference attendees are eligible to attend. Space is limited, so tickets are first-come, first-served.

Presented by Brian Self, ASEE Vice President of Membership

• Division Mixer
4:45 p.m. to 6:15 p.m.
Ballroom A, Minneapolis Convention Center
Mix and mingle with friends and colleagues as ASEE’s various divisions showcase what they do at one of the ASEE Annual Conference’s most popular events.

• Taste of Minneapolis
6:15 p.m. to 8:30 p.m.
Convention Center Plaza, Minneapolis Convention Center
Join friends and colleagues as we savor the tastes and sounds of Minneapolis!
2022 ASEE ANNUAL CONFERENCE
CONFERENCE HIGHLIGHTS

MONDAY, JUNE 27

• Registration Hours
7:00 a.m. to 5:00 p.m.
Exhibit Hall B&C, Minneapolis Convention Center

• ASEE Bistro
10:30 a.m. to 5:00 p.m.
Exhibit Hall B&C, Minneapolis Convention Center
Sponsored by Mouser Electronics

• Yoga
7:00 a.m. to 7:45 a.m.
Exhibit Hall B&C Foyer, Minneapolis Convention Center
Jump-start your day with a renewing stretch and meditation class!

• Monday Plenary
8:00 a.m. to 9:30 a.m.
Ballroom A, Minneapolis Convention Center

Keynote Speaker:
Jodi Benson
Chief Innovation, Technology, and Quality Officer, General Mills

As Chief Innovation, Technology, and Quality Officer at General Mills, Jodi Benson is responsible for the invention and commercialization of new food products and technologies that provide increasingly higher levels of well-being, ease, and joy to meet consumers’ evolving food values. Most recently, Benson served as leader for the integrated ITQ Centers of Excellence, focused on the broad set of capabilities most critical for General Mills’ ongoing success, such as food safety, nutrition, scientific and regulatory affairs, and product design and innovation. It is the mission of this team to turn possibilities into realities. Benson has held multiple positions within ITQ, including living in France and leading the International Growth Team’s Global Fresh Dairy innovation initiative for Yoplait and Häagen-Dazs. Benson, who joined General Mills in 1990 as an R&D scientist in the Pillsbury Division, received her bachelor’s degree in chemical engineering and polymer chemistry from the University of Minnesota. She has represented General Mills on the Häagen-Dazs Japan board of directors and the GMI Benefits Advisory Committee, and today serves on the General Mills Foundation board of trustees, the 301 INC advisory board, the Cereal Partners Worldwide board of directors, and the World Food Programme board.

• Interdivisional Town Hall Meeting: Preparing Engineers for the 2030s
3:30 p.m. to 5:00 p.m.
Ballroom B, Minneapolis Convention Center

• Focus on Exhibits: Welcome Reception
5:00 p.m. to 6:30 p.m.
Exhibit Hall B&C, Minneapolis Convention Center

Join your colleagues at the grand opening of the Exhibit Hall. Explore exciting new products, solutions, and technologies while enjoying refreshments, catching up with old friends, and making new ones.

Scan to view full PDF program
TUESDAY, JUNE 28

• **Registration Hours**
  8:00 a.m. to 5:00 p.m.
  Exhibit Hall B&C, Minneapolis Convention Center

• **Exhibit Hall Hours**
  9:45 a.m. to 6:00 p.m.

• **ASEE Bistro**
  8:45 a.m. to 5:00 p.m.
  Exhibit Hall B&C, Minneapolis Convention Center
  Sponsored by Mouser Electronics

• **Yoga**
  7:00 a.m. to 7:45 a.m.
  Exhibit Hall B&C Foyer, Minneapolis Convention Center
  Jump-start your day with a renewing stretch and meditation class!

• **ASEE Fellows Breakfast**
  8:00 a.m. to 9:30 a.m.
  Northstar A, Hyatt Regency Minneapolis
  Annual Academy of Fellows event is for ASEE Fellows only.

• **Focus on Exhibits Networking Break & ASEE Division Poster Session**
  9:45 a.m. to 11:15 a.m.
  Exhibit Hall B&C, Minneapolis Convention Center
  ASEE Division posters are available for perusing during lunch in the Exhibit Hall. Explore exhibit booths and see what posters the ASEE Divisions have to offer!

• **Tuesday Plenary**
  11:30 a.m. to 1:00 p.m.
  Ballroom A, Minneapolis Convention Center
  Join friends and colleagues at this special session moderated by ASEE President-Elect Jenna P. Carpenter featuring the Corporate Member Council’s keynote speaker, winners of the best overall PIC, Zone, and Diversity, Equity & Inclusion papers, and ASEE’s 2022 Outstanding Teaching Award recipient.

  **Keynote Speaker:**
  Bina Venkataraman
  Bina Venkataraman is an American journalist, author, and science and technology policy expert. She currently is an editor-at-large for the *Boston Globe*, where she served as editorial page editor from 2019 to 2022, and a fellow at New America. Since 2011, she has taught in the Program on Science, Technology, and Society at MIT. She formerly served as senior adviser for climate change innovation in the Obama White House, directed global policy initiatives at the Broad Institute of MIT and Harvard, and reported on the science desks of the *New York Times* and *Boston Globe*. Venkataraman is an alumna of Brown University and the Harvard Kennedy School.

  In her keynote speech, Venkataraman will address a pivotal question of our time: How can we secure our future and do right by future generations? She aims to parse the mistakes we make when imagining the future of our lives, businesses, and communities, revealing how we can reclaim our innate foresight. What emerges is a surprising case for hope—and a path to becoming the “good ancestors” we long to be.

**PAPERS PRESENTED**

2021 Best PIC I and Best Overall Paper Winner
“A New Way of Seeing”: Engagement with Women’s and Gender Studies Fosters Engineering Identity Formation
  Dr. Jenn Stroud Rossman, Lafayette College
  Prof. Mary A. Armstrong, Lafayette College

2021 Best Zone I and Best Overall Zone Paper Winner
A Study of Available Time for Engineering Undergraduates’ Involvement in Co-curricular Activities

Sreeram Kashyap
Dr. Andrew Olewnik, University at Buffalo, the State University of New York

2021 Best Diversity, Equity, and Inclusion Paper Winner

The Politics of Citation Practices in Engineering Education: A Citation Network Analysis of Intersectionality

Dr. Kristen Moore, University at Buffalo, The State University of New York
Dr. Nathan R. Johnson
Rev. Walter R. Hargrove

WEDNESDAY, JUNE 29

• Registration Hours
8:00 a.m. to 4:00 p.m.
Exhibit Hall B&C, Minneapolis Convention Center

• Exhibit Hall Hours
8:00 a.m. to 11:15 a.m.

• Yoga
7:00 a.m. to 7:45 a.m.
Exhibit Hall B&C Foyer, Minneapolis Convention Center

JUMP-START YOUR DAY WITH A RENEWING STRETCH AND MEDITATION CLASS!

• Focus on Exhibits Networking Break & NSF Grantees Poster Session
9:45 a.m. to 11:15 a.m.
Exhibit Hall B&C, Minneapolis Convention Center

ASEE’s exhibitors welcome you back for complimentary food and drinks to start the day. Whether it’s lab equipment, quality textbooks for your classes, or cutting-edge software, you’ll likely find something interesting in the hall.

• ASEE Awards Lunch
11:30 a.m. to 1:00 p.m.
Ballroom B, Minneapolis Convention Center

Sponsored by Minnesota State University, Mankato; NCEES; Boeing; and Dassault Systèmes

ASEE presents awards in a variety of areas, from best paper, teaching recognition, and professional and technical honors to a lifetime achievement award. This event showcases some of ASEE’s best and brightest, including our national award winners. The lunch is complimentary for award winners and their guests. Others may attend for $50 advance registration or $60 on-site.

• Focus on Exhibits Summertime Social
5:15 p.m. to 6:15 p.m.
Exhibit Hall B&C, Minneapolis Convention Center

Nothing says summer like a refreshing glass of sweet, cold lemonade. Escape the heat with a late-afternoon treat and see what’s “hot” on the Exhibit Hall floor!

• Institutional Council Reception (by invitation only)
7:00 p.m. to 8:30 p.m.
Seasons Meeting Space, Minneapolis Convention Center
**DISTINGUISHED LECTURES**

All distinguished lectures take place from 1:45 P.M. TO 3:15 P.M.

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**• DISTINGUISHED LECTURE: The Future is Brown and Black: Reimagining Our Relationship with Research**

Educational Research and Methods Division
Room 211, Minneapolis Convention Center

For too long, researchers have hidden behind false notions of objectivity and neutrality to avoid holding themselves accountable for the harms committed in the name of research. However, as the racially centered events of the past two years have demonstrated, the time for accountability is now. Rather than reflect on past wrongs, the Year of Impact on Racial Equity gives us the opportunity to look forward.

We must and should reimagine a path forward for educational research. We must rethink several fundamental aspects of the research process: our roles as researchers, our relationship to various concepts (e.g. neutrality, objectivity, bias), even what research can and cannot do.

The purpose of this distinguished lecture is to begin a conversation on what a paradigmatic shift in engineering education research looks like. What does the path forward look like today? What does it look like in 10 years? In 20 years? Institutional change always starts with individuals, and we have an opportunity to move the field of engineering education research forward in ways that empower everyone.

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**Moderated by**
Dr. Stephanie Cutler

**Speaker:**

Stephanie Masta  
Purdue University

Stephanie Masta is an associate professor of curriculum and instruction at Purdue University, with courtesy appointments in the School of Engineering Education and the Department of American Studies in the College of Liberal Arts.

A leading scholar in the field of Indigenous education, Masta’s research spotlights the centrality of Indigenous education within curriculum studies through the development and use of Indigenous methodologies to study Indigenous student experiences in educational contexts. She has extended her work on critical and Indigenous methodologies to engineering educational spaces, where she studies the experiences of Brown and Black students in engineering classrooms.

Masta’s work in Indigenous education and engineering education has led to invited talks at institutions such as the University of Arizona, Iowa State University, the University of Colorado Boulder, Drexel University, the University of Michigan, and Clemson University. She also has authored many peer-reviewed journal articles and given more than 35 international, national, and regional presentations at Indigenous education, curriculum studies, engineering education, and educational research conferences. Masta currently leads two research projects, Connecting Identity and Place: Understanding Indigenous Graduate Student Experiences in STEM, funded by the Spencer Foundation, and the NSF-funded Identifying Marginalization and Allying Tendencies in Engineering Teams, on which she is a co-PI. She served as principal investigator on the Experiences of Native Women in Higher Education, funded by the Purdue University Susan Bulkeley Butler Research Fellowship, and Colonial Discourses: Challenging Dominant Narratives in US History Curricula, funded by the Purdue Research Foundation. Masta has authored many peer-reviewed journal articles, including articles in the high-impact journals *Anthropology & Education Quarterly, International Journal of Qualitative Studies in Education, Teaching in Higher Education, and Studies in Engineering Education*. She has written one book chapter on how American Indian students make sense of school success and coedited the book *Ideating Pedagogy in Troubled Times: Approaches to Identity, Theory, Teaching, and Research*.

Collectively, her scholarship speaks to a wide range of educators, researchers, and community members interested in the use of critical and Indigenous methodologies to understand racism and marginalization in educational spaces.
**DISTINGUISHED LECTURE: The Trouble with Passion: How Searching for Fulfillment at Work Fosters Inequality**

Liberal Education/Engineering & Society Division  
**Auditorium 2, Minneapolis Convention Center**

In this talk, cosponsored by Community Engagement, LEES, and Equity, Culture & Social Justice, Erin Cech will outline the main arguments from her recent book exploring the passion principle and encourage engineering students, educators, and professionals to think through how inequities in success and bouncing back from failure develop from passion-seekers’ differential access to springboards and safety nets. “Follow your passion” is a popular mantra for career decision-making in the United States. Cech argues that this ubiquitous cultural narrative has a dark side: it can reinforce socioeconomic disadvantages and entrench occupational gender and race segregation when entwined with social biases about who fits in what fields, helping to reproduce an exploited, overworked white-collar labor force.

These findings have implications for cultural notions of “good work” popular in higher education and the US workforce and raise broader questions about what it means when becoming a dedicated labor force participant feels like an act of self-fulfillment.

**Moderated by**  
Dr. Scott M. Ferguson

**Speaker:**  
Dr. Erin A. Cech  
*University of Michigan*

Erin Cech is an associate professor in the departments of sociology and mechanical engineering (by courtesy) at the University of Michigan. She was a postdoctoral fellow at the Clayman Institute for Gender Research at Stanford University and was on the faculty at Rice University.

Cech earned her PhD in sociology in 2011 from UC San Diego and undergraduate degrees in electrical engineering and sociology from Montana State University. Her research examining cultural mechanisms of inequality reproduction—especially through seemingly innocuous cultural beliefs and practices—has appeared in the *Proceedings of the National Academy of Sciences*, the *American Journal of Sociology*, and the *American Sociological Review*. Cech has been awarded best papers at ASEE conferences for work related to inequality, diversity, and exclusion in engineering and cultures of engineering. Her first book, *The Trouble with Passion: How Searching for Fulfillment at Work Fosters Inequality* (University of California Press), was released in fall 2021, and her coauthored book with Mary Blair-Loy, *Misconceiving Merit: Paradoxes of Excellence and Devotion in Academic Science and Engineering* (University of Chicago Press), is out in 2022.

Her research is funded by multiple grants from the National Science Foundation and has been covered by the *New York Times*, the *Washington Post*, CNN, *Time*, and the *Harvard Business Review*. In 2020, she was named one of *Business Equality* magazine’s 40 LGBTQ+ Leaders Under 40.

**DISTINGUISHED LECTURE: Queering STEM Culture in US Higher Education: Navigating Experiences of Exclusion in the Academy**

Liberal Education/Engineering & Society Division  
**Auditorium 3, Minneapolis Convention Center**

ASEE has taken on several diversity, equity, and inclusion (DEI) initiatives over the years. The current Year of Impact on Racial Equity is a case in point.

This distinguished lecture continues the conversation of justice and inclusion within higher education, particularly in the world of STEM.

The invited speakers are leading experts in the field of racial, ethnic, gender, LGBTQ+, and intersectional issues. They have held leadership positions in ASEE and in other institutions, where they have promoted engagement in application of their own research.

Kelly J. Cross, Stephanie Farrell, and Bryce Hughes will use their experience editing the book *Queering STEM Culture in US Higher Education* to bring powerful narratives of inclusion and exclusion from our own STEM postsecondary peers to the attention of ASEE. It is a bit unusual in that all three coeditors will be on stage, but we hope that the multiple standpoints will represent the values of diversity that ASEE members promote.

The speakers will reflect on existing challenges as well as offer guidance on becoming an ally.

**Moderated by**  
Dr. Scott M. Ferguson
Speakers:

**Dr. Kelly J. Cross**  
*University of Nevada, Reno*  
Kelly J. Cross, assistant professor of chemical engineering at the University of Nevada Reno, is a culturally responsive practitioner, researcher, and educational leader. Her research interests include diversity and inclusion in STEM, identity construction, intersectionality, teamwork and communication skills, and educational assessment. Her teaching philosophy focuses on student-centered approaches such as problem-based learning and culturally relevant pedagogy. Cross's complementary professional activities promote inclusive excellence through collaboration.

**Dr. Stephanie Farrell**  
*Professor and Chair of Experiential Engineering Education, Rowan University*  
Stephanie Farrell is interim dean and professor and founding chair of the Experiential Engineering Education Department in the Henry M. Rowan College at Rowan University. She has contributed to engineering education through her work in inductive pedagogy, spatial skills, and inclusion and diversity. She has been honored by ASEE with several teaching awards, including the 2004 National Outstanding Teaching Medal and the 2005 Quinn Award for experiential learning. She was also a 2014–15 Fulbright Scholar in Engineering Education at Dublin Institute of Technology in Ireland.

**Dr. Bryce E. Hughes**  
*Montana State University–Bozeman*  
Bryce Hughes is an assistant professor of adult and higher education at Montana State University. In 2018, he published one of the first studies showing that LGBQ students are more likely to leave STEM fields than their heterosexual peers. Hughes holds a bachelor of science in general engineering from Gonzaga University, a master of arts in student development administration from Seattle University, and a PhD in education from UCLA. He has coauthored and/or facilitated Safe Zone-type trainings at two institutions in addition to ASEE and helped spearhead the establishment of an LGBT Resource Center at Gonzaga, one of the first located at a Catholic university. Before moving into a faculty role, Hughes oversaw a peer-mentoring program in diversity and multicultural affairs at Green River College and coordinated the LGBT Resource Center at Gonzaga.

**DISTINGUISHED LECTURE:**  
*Meditations on the Words of a Black King: The Wicked Problem of Shallow Understanding*  
*ASEE Committee on Diversity, Equity & Inclusion*  
*Room 101C, Minneapolis Convention Center*

“Shallow understanding from people of good will is more frustrating than absolute misunderstanding from people of ill will.”

These words were penned by the scholar, pastor, and activist Dr. Martin Luther King Jr. while sitting in a Birmingham city jail in 1963. His righteous indignation was on full display because he felt frustrated that the White people who expressed sympathy with his pursuit of justice were more of a hindrance to his efforts than the White people who were ardently against justice for Black people. King’s words still resonate with James Holly Jr. almost 60 years later, though the current circumstance is not entirely analogous. He finds his efforts, and those of many Black friends and colleagues, to actualize racial equity in engineering education are constrained greatly by “well-intentioned” and sympathetic colleagues of all races because anti-Black prejudice and internalized racism are not limited to White people.

In this address, Holly will discuss how shallow, superficial understanding of the contributing factors to racial inequity remains a grand challenge to racial equity in engineering education, and he will share his thoughts on the implications of this wicked problem for engineering teaching, research, and practice.

**Moderator:**  
*Ms. Rachelle Reisberg*

**Speaker:**  
*Dr. James Holly Jr.*  
*University of Michigan*  
Dr. James Holly Jr. is an assistant professor of mechanical engineering and core faculty member within the Engineering Education Research program at the University of Michigan. He earned a bachelor’s degree from Tuskegee University and a master’s degree from Michigan State University, both in mechanical engineering, and his doctorate in engineering education from Purdue University.

His research paradigm is shaped by his experiences growing up in a Black church within a Black city and later studying...
engineering at a Black institution, three spaces where Blackness is both normal and esteemed. As such, he sees his teaching, research, and service as promoting pro-Blackness, affirming the humanity and epistemic authority of Black people in engineering education.

Holly’s scholarship focuses on the ways disciplinary knowledge, such as mechanical engineering, reinforces racialized power; the role of culture and cognition in teaching and learning; and preparing pre-college engineering educators to identify and counteract racial inequity. He helped create the Equity, Culture, and Social Justice in Education Division within ASEE and serves on the editorial board for both the *Journal of Engineering Education* and the *Journal of Pre-College Engineering Education Research*.

**DISTINGUISHED LECTURE: 2021**

**Best PIC And Zone Papers**

Room 208, Minneapolis Convention Center

Please note: Best overall PIC and Zone papers are featured at the Tuesday Plenary.

**2021 BEST PIC AND ZONE PAPERS**

**Moderator:**
Dr. Christi L. Patton Luks

**PAPERS PRESENTED**

**2021 BEST PIC II PAPER WINNER:** Scaling Hands-On Learning Principles in Manufacturing through Augmented Reality Disassembly and Inspection of a Consumer Product

Ms. Emily Welsh, Massachusetts Institute of Technology
Ms. Dan Li, Massachusetts Institute of Technology
Prof. A. John Hart, Massachusetts Institute of Technology
Dr. John Liu, Massachusetts Institute of Technology

**2021 BEST PIC III PAPER WINNER:** Engage AI: Leveraging Video Analytics for Instructor-Class Awareness in Virtual Classroom Settings

Mr. Jeremy Stairs, University of Toronto
Mr. Raman Mangla
Mr. Manik Chaudhery
Mr. Janpreet Singh Chandhok
Dr. Hamid S. Timorabadi, University of Toronto

**2021 BEST PIC IV PAPER WINNER:** Exploring the Relationships between Acculturation Attitudes and Demographic Characteristics in Engineering Workplaces

Rohini Abhyankar, Arizona State University
Dr. Samantha Ruth Brunhaver, Arizona State University, Polytechnic campus

**2021 BEST PIC V PAPER WINNER:** Teaching in the Era of Covid 19—A Reinvented Course Project for an Ocean Engineering Course

Dr. Maija A. Benitz, Roger Williams University

**2021 BEST ZONE II PAPER WINNER:** Team Formation in the ECE Capstone Course and Studying Impact

Dr. Rachana Ashok Gupta, North Carolina State University at Raleigh
Greg A. Dunko

**2021 BEST ZONE III PAPER WINNER:** Correlation of Student Participation in Practice Exams and Actual Exam Performance

Dr. Antonette T. Cummings P.E., University of Wisconsin–Platteville

**2021 BEST ZONE IV PAPER WINNER:** Investigating Student Perceptions of Team-based Brainstorming During Conceptual Design: Challenges and Recommendations

Ahmed Osman, California Polytechnic State University, San Luis Obispo
Eric Cuellar, California Polytechnic State University, San Luis Obispo
Aimee Tai Chiem, California Polytechnic State University, San Luis Obispo
Ms. Christianna Bethel
Dr. Benjamin David Lutz, California Polytechnic State University, San Luis Obispo

Scan to view Sessions Planner
• DISTINGUISHED LECTURE: Renewable Energy Education, Training, and Outreach in the Midwest

Energy Conversion and Conservation Division
Auditorium 1, Minneapolis Convention Center

Moderator:
Dr. Matt Aldeman

Speaker:
Nick Hylla

Nick Hylla is the executive director of the Midwest Renewable Energy Association, where he works in partnership with organizations throughout the Midwest to advance renewable energy education and market development initiatives.

Hylla holds an MS degree in natural resource management, has more than 10 years of experience in nonprofit leadership, and serves as the principal investigator on two US Department of Energy cooperative agreements as part of the SunShot Initiative. These efforts, focused on reducing cost and increasing market penetration for solar PV systems, have supported the development of the Midwest Grow Solar Partnership and the Solar University Network.

• ASEE President’s Farewell Reception

6:00 p.m. to 7:30 p.m.
Ballroom A, Minneapolis Convention Center
Sponsored by Dassault Systèmes

Join your friends and colleagues as we say farewell to President Adrienne Minerick, welcome incoming President Jenna Carpenter and new ASEE Board members, and look forward to Baltimore, Maryland, site of the 2023 Annual Conference & Exposition.

Speakers:

Dr. Adrienne R. Minerick
Dean, College of Computing
Professor, Chemical Engineering; Michigan Technological University

Dr. Jenna P. Carpenter
Founding Dean and Professor of Engineering
Campbell University
Renew your membership online or at the Info Kiosk during* the 2022 Annual Conference and Exposition and get 22% off your membership dues**

** CURRENT ANNUAL MEMBERSHIP DUES **

<table>
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<tr>
<th>CATEGORY</th>
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<tr>
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* Between and including June 26-29, 2022; use promo code ASEE2022
** The discount does not apply to division dues or publication subscriptions.
SAFE ZONE ALLY TRAINING
All sessions held at Lakeshore A, Hyatt Regency Minneapolis

Level 1
Sun, June 26 1:15 p.m. to 2:45 p.m.

Level 2
Mon, June 27 1:45 p.m. to 3:15 p.m.

Level 3
Wed, June 29 8:00 a.m. to 9:30 a.m.

• Queerness in STEM Book Panel
  Sunday, June 26, 1:15 p.m. to 2:45 p.m.
  Lakeshore B, Hyatt Regency Minneapolis

• Diversity, Equity, and Inclusion: 100
  Sunday, June 26, 3:00 p.m. to 4:30 p.m.
  Lakeshore A, Hyatt Regency Minneapolis

• Best DEI Paper Award Finalists
  Monday, June 27, 9:45 a.m. to 11:15 a.m.
  Lakeshore A, Hyatt Regency Minneapolis

• Positionality 101: Reflecting on Positionality in your Research and Practice to Equity and Impact
  Monday, June 27, 9:45 a.m. to 11:15 a.m.
  Lakeshore B, Hyatt Regency Minneapolis

• ASEE Commission on Diversity, Equity, and Inclusion Annual Meeting & Roundtable
  Monday, June 27, 11:30 a.m. to 1:00 p.m.
  Room M100A, Minneapolis Convention Center

• Engaging with Racialized Privilege in the STEM Classroom to Advance Equity
  Monday, June 27, 1:45 p.m. to 3:15 p.m.
  Lakeshore B, Hyatt Regency Minneapolis

• Diversity, Inclusion, and Equity Activities in Engineering and Computer Science Classrooms: You Can Do It, We Can Help
  Tuesday, June 28, 8:00 a.m. to 9:30 a.m.
  Lakeshore C, Hyatt Regency Minneapolis

• Celebration of the Year of Impact on Racial Equity
  Tuesday, June 28, 3:30 p.m. to 5:00 p.m.
  Lakeshore A, Hyatt Regency Minneapolis

• Diversity, Equity, and Inclusion: 200
  Wednesday, June 29, 8:00 a.m. to 9:30 a.m.
  Lakeshore B, Hyatt Regency Minneapolis

• How to Become an Inclusive Leader
  Wednesday, June 29, 11:30 a.m. to 1:00 p.m.
  Lakeshore A, Hyatt Regency Minneapolis
• DISTINGUISHED LECTURE:
Meditations on the Words of a Black King: The Wicked Problem of Shallow Understanding

Wednesday, June 29, 1:45 p.m. to 3:15 p.m.
Room 101C, Minneapolis Convention Center

Moderated by Dr. Jeremi London

Speaker: Dr. James Holly, Jr., Assistant Professor of Mechanical Engineering, University of Michigan

• Additional activities of note:

Monday, June 27, 5:00 p.m. to 6:30 p.m.
Exhibit Hall, Minneapolis Convention Center

During the Focus on Exhibits, there will be a meet-up for everyone involved in the YIRE Taskforce, as well as the students involved in the competition. Photos will be taken and anyone wishing to go to dinner together (informal) can meet and decide where to go from here.

Tuesday, June 28, 11:30 a.m. to 1:00 p.m.
Ballroom A, Minneapolis Convention Center

Tuesday Plenary

The best DEI paper from 2021 will be included in the Tuesday Plenary, along with the best PIC and Zone papers. The 2021 Best Diversity, Equity, and Inclusion Paper Winner: The Politics of Citation Practices in Engineering Education: A Citation Network Analysis of Intersectionality by Kristen Moore (University at Buffalo, The State University of New York), Nathan Johnson, and Walter Hargrove.

Tuesday, June 28, 5:15 p.m. to 6:15 p.m.
Exhibit Hall, Minneapolis Convention Center

During the Focus on Exhibits, there will be a book reading of Queer in STEM.

Authors: Kelly Cross, Stephanie Farrell, Bryce Hughes
PLEASE HELP ASEE IMPROVE MEMBER SERVICES.

• ASEE Member Feedback on New Website, Business, and Paper Management Systems

Monday, June 27, 2022, 9:45 a.m. to 11:15 a.m.
and 11:30 a.m. to 1:00 p.m.
Ballroom B, Minneapolis Convention Center
Tuesday, June 28, 2022, 1:45 p.m. to 3:15 p.m.
Ballroom A, Minneapolis Convention Center
Tuesday, June 28, 2022, 3:30 p.m. to 5:00 p.m.
Ballroom A, Minneapolis Convention Center
Wednesday, June 29, 2022, 8:00 a.m. to 9:30 a.m.
and 11:30 a.m. to 1:00 p.m.
Ballroom A, Minneapolis Convention Center

• ASEE Officer Feedback Session on New BASS App

Monday, June 27, 1:00 p.m. to 1:45 p.m.
Tuesday, June 28, 1:00 p.m. to 1:45 p.m.
Wednesday, June 29, 1:00 p.m. to 1:45 p.m.
Ballroom A, Minneapolis Convention Center
Open to ASEE Division, Council, Zone, Committee, and Commission officers
TEST YOUR KNOWLEDGE FOR A CHANCE TO WIN AN IPAD!

Are you a movie buff? Flex your pop culture muscles with our college-themed trivia!

To play and check the trivia leaderboard, stop by the Liaison EngineeringCAS booth #823

Prizes include:
1st place - iPad
2nd place - Beats Wireless Headphones
3rd place - Yeti Travel Mug

Visit us to learn how our enrollment solutions can help your campus
**ABET SESSION - Becoming a Program Evaluator Might Be for You!**

**Sunday, June 26 3:00 p.m. to 4:30 p.m.**
Room 101C, Minneapolis Convention Center

Each year, more than 2,000 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:

- ABET’s need for new volunteers
- The nature of program evaluator work
- What’s in it for you?
- Threshold requirements for service and the program evaluator selection process
- Training requirements
- The program evaluator “life cycle”

*Speaker: Jennifer Brock, Associate Dean for Academics and Professor of Mechanical Engineering, University of Alaska Anchorage College of Engineering*

**ABET SESSION: What’s Happening at ABET in 2022 – 2023 ... an Information Session**

**Monday, June 27 1:45 p.m. – 3:15 p.m.**
Room 101C, Minneapolis Convention Center

This ABET-sponsored program will share current activities and news with engineering educators. If you are new to ABET accreditation or have programs that are seeking ABET accreditation for the first time, this session is for you. Topics include what types of programs are accredited, what the accreditation criteria and procedures are, who writes them, who serves as evaluators and how they are assigned to your program, who makes final accreditation decisions and how, how assessment tools are used and misused in the ABET process, and who ABET matters to (and why). Come ready with your questions and feedback for senior ABET representatives.

*Speakers: Joseph L. Sussman, Ph.D., F.ASME, Chief Accreditation Officer, Chief Information Officer, ABET; Jane Emmet, Senior Director, Accreditation Operations, ABET*

**ABET SESSION: Foundations for Successful Program Assessment**

**Monday, June 27 3:30 p.m. to 5:00 p.m.**
Room 101C, Minneapolis Convention Center

This session provides an overview of the program assessment process, highlighting a few key elements of a successful and sustainable planning process. Learn components of, and how to organize, your assessment process to ensure efficient assessment and impactful results. Next, ask a question, listen, and learn alongside colleagues in an open discussion on best practices in program assessment.

*Speaker: James Warnock, Professor and Founding Chair, School of Chemical, Materials, and Biomedical Engineering, University of Georgia, and Adjunct Director of Professional Offerings, ABET*

**ABET SESSION: How to Lead the Preparation for an Onsite Visit**

**Tuesday, June 28 3:30 p.m. to 5:00 p.m.**
Room 101C, Minneapolis Convention Center

Leading the institutional planning and execution for an onsite ABET visit involves creating an infrastructure of support from many groups of stakeholders. Best practices from the viewpoints of both Program Evaluators and institutional representatives will be of interest to institutional representatives and others preparing for onsite visits.

*Speaker: ABET Engineering Accreditation Commission and Engineering Technology Accreditation Commission Leadership*
• **Engineering Culture Roundtables**

**Sun. June 26, 2022 1:15 p.m. to 2:45 p.m.**
Ballroom B, Minneapolis Convention Center

**Mon. June 27, 2022 1:45 p.m. to 3:15 p.m.**
Ballroom B, Minneapolis Convention Center

**Tue. June 28, 2022 1:45 p.m. to 3:15 p.m.**
Ballroom B, Minneapolis Convention Center

**Wed. June 29, 2022 8:00 a.m. to 9:30 a.m.**
Ballroom B, Minneapolis Convention Center

In the broad field of engineering, do our attitudes and behavioral characteristics—our culture—best serve our core mission of solving problems for our world and for our society? Additionally, do the practices and skills we develop in our students place greater importance on some information than others? Given the changing forces influencing our world and society, should we revisit the practices and skills of valuing and using information? Should we revisit design and optimization processes so that our engineered solutions prove sustainable? Roundtables will be facilitated to explore the Strengths, Opportunities, Aspirations, and Results (SOAR) of our engineering culture. As Ray McDermott noted in 2006, “Culture is not a past cause to a current self. Culture is the current challenge to possible future selves.” Join these roundtable discussions to participate in defining our future selves.
With engineering, physical sciences, computer science, and mathematics all in one college, the University of Minnesota Twin Cities College of Science and Engineering is uniquely positioned to address some of the most important issues of our time.

cse.umn.edu
ASEE would like to thank
Adrienne Minerick
for her contributions as
President 2021–2022
• Teaching with MATLAB and Simulink Using Your Learning Management System (LMS)

Sunday, June 26, 1:15 p.m. to 2:45 p.m.
Room 101A, Minneapolis Convention Center
Presented by MathWorks

Speakers: Jeffrey Alderson, Online Learning Product Marketing; Gen Sasaki, Customer Success Engineer; and Dr. Hoda Sharifi

In this session, attendees will get hands-on experience with tools for teaching with MATLAB and Simulink within a Learning Management System (LMS) from the perspective of both learners and instructors. This session is applicable to any instructor who is currently teaching, considering, or planning to teach an academic topic with MATLAB & Simulink at the secondary, undergraduate, or graduate academic level. Attendees will be invited to enroll in an LMS-based course that showcases MathWorks teaching offerings prior to the session. They will be able to try and explore self-paced training content and autograded MATLAB-based assignments as well as other MathWorks cloud-based tools for teaching and learning. In addition, all attendees will leave the session with access to resources, including a copy of the workshop course, courseware, examples, and online training, to help increase engagement of their students in courses.

Attendees will learn how to:
• Combine instructor-authored content with MATLAB teaching tools
• Assign off the shelf, self-paced learning content for teaching MATLAB skills
• Integrate labs, courseware, and textbooks authored by MATLAB power users
• Assess student learning with automated assessments using MATLAB Grader
• Report on learner progress in the LMS gradebook for MATLAB and Simulink tools

• Applications of the Analog Discovery Board to Upper-level Electrical Engineering Courses

Sunday, June 26, 1:15 p.m. to 2:45 p.m.
Room 101B, Minneapolis Convention Center
Presented by Digilent

Speakers: Dr. Cory J. Prust and Dr. Steven Holland, Department of Electrical Engineering and Computer Science, Milwaukee School of Engineering

This workshop explores creative ways to utilize the Analog Discovery to provide students with hands-on experimentation with more advanced concepts typical of upper-division electrical engineering courses. Unique approaches utilize the broad suite of measurement tools on the Analog Discovery platform. Demonstrations include applications in transmission lines, signals and systems, analog electronics, and communication system theory.

• Engineering a Better Engineering Education

Sunday, June 26, 3:00 p.m. to 4:30 p.m.
Room 101B, Minneapolis Convention Center
Presented by Texas A&M Engineering

Speakers: Prof. Harry A. Hogan, Senior Associate Dean and Professor of Mechanical Engineering; Prof. Tracy Anne Hammond, Director, Institute for Engineering Education and Innovation, and Professor of Computer Science and Engineering

Texas A&M University has a reputation for providing students with an innovative learning environment and engineering education. The Institute for Engineering Education & Innovation (IEEI) supports the advancement of scholarly work and the pedagogy of engineering education. This session will highlight the collaborations, initiatives, programs, and research that drive engineering education at all levels, creating a transformative and inclusive environment for students, educators, and researchers.
2022 ASEE ANNUAL CONFERENCE
SPONSOR TECHNICAL SESSIONS

• Bringing Engineering Learning to Life

Monday, June 27, 9:45 a.m. to 11:15 a.m.
Room 101A, Minneapolis Convention Center
Presented by Wiley

Speakers: Ryan Barlow, Lead Content Author—Mechanical Engineering; Adrian Rodriguez, Lecturer, University of Texas at Austin; Yasaman Adibi

In this session, we showcase how we bring engineering content to life with animations, learning questions, and auto-graded assessments on the innovative and engaging zyBooks platform and share opportunities for research collaborations. Experience how interactivity has been added to trusted and well-known engineering textbooks in the form of animations, learning questions, and auto-graded assessments on the innovative and engaging zyBooks platform. See how we can help your students succeed and support your education research.

• Transitioning to Fusion

Monday, June 27, 9:45 a.m. to 11:15 a.m.
Room 101B, Minneapolis Convention Center
Presented by Autodesk

Speakers: Dan Banach, Senior Technical Program Manager, and Fabiola Fiuza Clayton, Education Program Manager

Autodesk’s Fusion 360 is the world’s first cloud-based 3D CAD, CAM, and CAE integrated platform. In this session we will explore how to leverage Fusion 360 to introduce your students to connected workflows and integrated manufacturing. From cloud-based design management to AR, you will learn how to use tools and techniques to teach for the future of design and manufacturing.

• Using the FE Exam for Effective Outcomes Assessment

Monday, June 27, 11:30 a.m. to 1:00 p.m.
Room 101A, Minneapolis Convention Center
Presented by NCEES

Speakers: Bobby Crawford, Professor of Mechanical Engineering, Quinnipiac University; John W. Steadman, Dean Emeritus, University of South Alabama

This session highlights best practices in outcomes assessment using the NCEES Subject Matter Reports to provide participants with information about the strengths and weaknesses of students in a program. The presentation will specifically focus on using the FE results as one tool in assessing the ABET student outcomes. Attend and learn more about how the FE exam can be an effective tool for your program.

• Engineering for US All: A National Pilot Program for High School Engineering

Monday, June 27, 11:30 a.m. to 1:00 p.m.
Room 101B, Minneapolis Convention Center
Presented by the University of Maryland

Speakers: Darryll J. Pines, President, University of Maryland College Park; Stacy S. Klein-Gardner, Adjunct Professor, Vanderbilt University; Kevin Calabro, Director, University of Maryland College Park; Adam Carberry, Associate Professor, Arizona State University; and Katey Shirey, eduKatey STEAM Education

The panelists will provide an overview of the NSF-funded Engineering for US All (e4usa) program and update the community on the progress and status of this effort. The session will conclude with roundtable discussions in which the speakers will talk about partnership opportunities and seek guidance from attendees. Come ready to learn and participate!

• Edge Machine Learning in the Classroom

Monday, June 27, 1:45 p.m. to 3:15 p.m.
Room 101B, Minneapolis Convention Center
Presented by Edge Impulse

Speaker: Shawn Hymel, Senior DevRel Engineer, Edge Impulse

Machine learning is a fast-growing field, and recent advances in hardware and software make it possible to run many deep learning algorithms on embedded systems. As a result, machine learning is expanding beyond just advanced computer science curricula and into physical devices to help solve unique problems in medicine, agriculture, industrial maintenance, and consumer electronics. This session will provide a hands-on demonstration of Edge Impulse, the leading-edge machine learning studio that helps you collect
and analyze data, train machine learning algorithms, and deploy them to a variety of embedded systems. We will also discuss how edge machine learning can be integrated into curriculum and ask attendees for feedback on how Edge Impulse can be improved as a teaching tool.

**Impact Driven Entrepreneurship**

**Monday, June 27, 3:30 p.m. to 5:00 p.m.**
**Room 101B, Minneapolis Convention Center**
**Presented by Texas A&M Engineering**

**Speakers:** Magdalini Z. Lagoudas, Executive Director, Industry & Nonprofit Partnerships, Engineering Academic and Student Affairs; Rodney Boehm, Director of Engineering Entrepreneurship

Today, engineering students are required to receive an education that has real impact on their future careers, lives, and society. It must do more than just provide skills and knowledge acquired in a classroom setting. The ideal education involves practice and application as well as university-level support to unify curricular, co-curricular, and research experiences. This experience develops a creative, yet strategic, mind-set which translates to tangible, societal value—whether in an established company, government agency, or the implementation of a start-up. This session will describe the continuum of courses, programs, and research-inspired entrepreneurship being implemented at Texas A&M University that is driving engineering students at all levels to create impact in their entrepreneurial education.

**SPONSOR TECH SESSION:**

**Monday, June 27, 3:30 p.m. to 5:00 p.m.**
**Room 101A, Minneapolis Convention Center**
**Presented by Gradescope by Turnitin**

**A New Hands-On Student Control System Kit with Complete Course**

**Tuesday, June 28, 8:00 a.m. to 9:30 a.m.**
**Room 101A, Minneapolis Convention Center**
**Presented by STMicroelectronics**

**Speakers:** William J. Kaiser, Professor of Electrical Engineering, University of California Los Angeles; Marco De Fazio, STMicroelectronics, Geneva, Switzerland

Control systems instruction has never been more urgent or rewarding due to the wide range of new product development challenges from autonomous surface and air vehicles to medical robotics. While control-systems education is central to the engineering curriculum, unlike other disciplines, it has not supported individual student hands-on design as a result of the lack of physical electromechanical systems. A fundamental advance has been made introducing the Rotary Inverted Pendulum, the Edukit system, integrating precise digital motor actuator and digital sensor systems. The control system is a complete kit integrating a real-time, open-source solution operating on an STMicroelectronics STM32 processor. Straightforward MATLAB and Octave tools are provided for students to visualize and configure the real-time control system. The low cost Edukit is now commercially available worldwide and can be purchased and applied by individual students or used to equip instructional laboratories. Edukit also includes a fundamental breakthrough in digital actuator design that has solved a long-standing problem associated with rate-limited actuators in control systems. This provides precise linear and also programmable actuator transfer function performance. A critical capability of the Edukit system includes a Real Time Control System Workbench. This provides real-time display of system response to stimuli that may be selected as well as control system configuration. Control system characterization includes direct measurement of the critical sensitivity functions. This presentation will describe the Edukit system and a new undergraduate curriculum based on an open-source and complete set of instructional tutorials and systems. This has been successful in course offerings for students from entry level, with a first introduction to control systems, to upper division students with advanced control-system course experience. With the new Edukit, a complete course spanning introduction to control systems with a design sequence from stable to unstable plants and with Output Feedback and Full State Feedback. This presentation will demonstrate the Edukit system, describe its complete set of online tutorials providing a full range of student guidance and development examples, and describe the exceptionally successful results of remote and in-person courses in 2021 and 2022 with formal student evaluation results and the open-source guidance resources available for instructors and students.
• Shifting Expectations for Engineering Education in a Post-2020 World: Student and Faculty Perspectives

Tuesday, June 28, 8:00 a.m. to 9:30 a.m.
Room 101B, Minneapolis Convention Center

Presented by McGraw Hill

Speakers: Carlotta Berry, Chair and Professor of Electrical and Computer Engineering, Rose-Hulman Institute of Technology; Conrad Zapanta, Teaching Professor of Biomedical Engineering, Carnegie Mellon University; Joan Wawire, University of Houston

Join McGraw Hill and ASEE’s Student Division for an interactive panel discussion where faculty members and students discuss how their expectations have changed as a result of the pandemic. It’s no secret that 2020 upended and challenged most of the practices we were accustomed to following. Now that we’re returning to some semblance of normalcy, how do we evolve to incorporate the ideal blend of older and newer approaches? This discussion will cover everything from mental health concerns to classroom management as well as the tension between preserving the inclusion of empathy and humanity in engineering education without unduly burdening faculty or encouraging students to take advantage of flexible policies. Get ready to tackle tough topics and to provide your own opinions and solutions!

• Using the FE Exam for Effective Outcomes Assessment

Tuesday, June 28, 1:45 p.m. to 3:15 p.m.
Room 101A, Minneapolis Convention Center

Presented by NCEES

Speakers: Bobby Crawford, Professor of Mechanical Engineering, Quinnipiac University; John W. Steadman, Dean Emeritus, University of South Alabama

This session highlights best practices in outcomes assessment using the NCEES Subject Matter Reports to provide participants with information about the strengths and weaknesses of students in a program. The presentation will specifically focus on using the FE results as one tool in assessing the ABET student outcomes. Attend and learn more about how the FE exam can be an effective tool for your program.

• What eResources Would Help Your Students Learn Mechanics?

Wednesday, June 29, 8:00 a.m. to 9:30 a.m.
Room 101B, Minneapolis Convention Center

Presented by McGraw Hill

Join McGraw Hill and engineering mechanics faculty for a breakfast discussion on how eResources can be used to help advance student learning and engagement. What does the engagement need to look like and how does that impact the cost-benefit analysis on an instructor’s time? How could automated tools be used to accomplish the following:

• Create more student engagement
• Make difficult topics accessible to students by providing practice opportunities
• Free-up some of the instructor’s time to spend helping students

Breakfast will be served. Space is limited. Please RSVP: https://info.mheducation.com/McGraw_Hill_Breakfast_ASEE_RSVP.html
### ASEE MERCHANDISE

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**2022 ASEE ANNUAL CONFERENCE**

**Schedule subject to change. Please go to [https://2022-asee.slayte.com/](https://2022-asee.slayte.com/) for up-to-date information.**

**GRAB YOUR GEAR!**
JOIN ASEE PRESIDENT, ADRIENNE MINERICK, DEAN, COLLEGE OF COMPUTING PROFESSOR, DEPARTMENT OF CHEMICAL ENGINEERING MICHIGAN TECHNOLOGICAL UNIVERSITY

DR. LAURA YIN, ACTING ASSOCIATE DEAN COLLEGE OF SCIENCE, ENGINEERING AND TECHNOLOGY MINNESOTA STATE UNIVERSITY, MANKATO

W. SAMUEL EASTERLING, JAMES L. AND KATHERINE S. MELSA DEAN OF ENGINEERING IOWA STATE UNIVERSITY COLLEGE OF ENGINEERING

AT THE RIBBON CUTTING CEREMONY

Monday, June 27th, 5PM Exhibit Hall B&C, Minneapolis Convention Center
INDUSTRY DAY SESSIONS

• **INDUSTRY DAY**
  Tuesday, June 28, 2022

  CMC Breakfast – 8:00 a.m. to 9:30 a.m.
  Exhibits – 9:45 a.m. to 11:15 a.m.
  Industry Day Plenary – 11:30 a.m. to 1:00 p.m.
  CMC Session I – 1:45 p.m. to 3:15 p.m.
  CMC Session II – 3:30 p.m. to 5:00 p.m.
  Exhibit Social – 5:00 p.m. to 6:00 p.m.
  Council Reception – 7:00 p.m. to 8:30 p.m.

• **INDUSTRY DAY: Corporate Member Council Networking Breakfast**
  Tuesday, June 28, 8:00 a.m. to 9:30 a.m.
  Lakeshore A, Hyatt Regency Minneapolis

• **Tuesday Plenary**
  Tuesday, June 28, 11:30 a.m. to 1:00 p.m.
  Ballroom A, Minneapolis Convention Center

Join friends and colleagues at this special session moderated by ASEE President-Elect Jenna P. Carpenter featuring the Corporate Member Council’s keynote speaker, winners of the best overall PIC, Zone, and Diversity, Equity, and Inclusion papers, and ASEE’s 2022 Outstanding Teaching Award recipient.

Keynote Speaker: Bina Venkataraman

• **INDUSTRY DAY TECHNICAL SESSION I: Changing the Equation for Diversity, Equity, Inclusion, and Access Through Academia/Industry Collaboration**
  Tuesday, June 28, 1:45 p.m. to 3:15 p.m.
  Room 101D, Minneapolis Convention Center

  Moderator: P.J. Boardman, Global Education, MathWorks, Chair-Elect ASEE CMC
  Panel: Stacy Klein-Gardner, e4usa Co-Director, YES Lead

  Engineering and Director of Partnerships; Renatta Tull, Vice-Chancellor of Diversity, Equity, and Inclusion, UC Davis; Melinda Higgins, Director of STEM Programs, U.S. Dept. of Energy, Office of Nuclear Energy; Dr. Jenna Carpenter, Dean, Campbell University, President-Elect ASEE; Boz Bell, Public Sector Sales, HP

  How do we change the equation to increase diversity, equity, inclusion, and access in engineering? Join this panel of thought leaders in academia and industry to explore real cases and success stories to show how academia/industry collaboration can open up access to encourage greater diversity, equity, and inclusion in engineering to prepare students for the jobs of tomorrow.

• **Climate Change Panel CMC Session 2: Tackling Climate Change Through Education, Research, and Industry Collaboration**
  Tuesday, June 28th 3:30 p.m. to 5:00 p.m.
  Room 101D, Minneapolis Convention Center

  Moderator: Stephanie Harrington
  Panel: Mary Gilliam, Staff Researcher at GM R&D; Lisa Kempler, Research and Geoscience Strategist, MathWorks; Michael Milligan, CEO, ABET; Mark S. Smith, Program Manager, Technology Integration, Vehicle Technologies Office, U.S. Department of Energy

  How do educators and industry approach climate change through education, research, and collaboration with industry? Join this session to hear specific case studies and examples of best practices and success stories in addressing the many issues around climate change.

• **Institutional Council Reception (by invitation only)**
  Tuesday, June 28, 7:00 p.m. to 8:30 p.m.
  Seasons, Minneapolis Convention Center

Social event for the Corporate Member Council, Engineering Research Council, Engineering Technology Council, and Engineering Deans Council
ASEE would like to acknowledge the generous support of our premier corporate partners. ASEE is proud to work closely with these strategic partners in pursuit of a shared vision to ensure, advance, and promote excellence in all aspects of engineering and engineering technology education.

Join these innovative engineering and technology organizations in showcasing a commitment to furthering excellence in engineering education—become an ASEE annual conference sponsor today!

For more information, please visit www.asee.org or contact Ashley Krawiec, Manager of Event Sales, at 202-649-3838 or a.krawiec@asee.org
ASEE would like to thank the following sponsors for their generous support of the 2022 ASEE Annual Conference. Thank you for your commitment to furthering excellence in engineering and engineering technology education.

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ASEE would like to thank the following sponsors for their generous support of the 2022 ASEE Annual Conference. Thank you for your commitment to furthering excellence in engineering and engineering technology education.

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MOUSER ELECTRONICS

NC STATE Engineering

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WPI

University of Minnesota
2022 ASEE ANNUAL CONFERENCE
REGISTRATION INFORMATION AND FEES

Included in Your Registration:

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COVID-19 Requirements
Attendees must be vaccinated and have at least one booster shot and are reminded of their obligation under the Society's Code of Ethics when asked to attest to this status. Unvaccinated persons may attend provided they wear a face mask throughout the conference except when actively eating or drinking. All individuals are welcome to wear a face mask per their health status and comfort level.

*K-12 Teachers
K-12 Teacher rate of $250 applies to the entire conference. Please email conferences@asee.org to complete your registration.

Note: School ID is required.

**Industry Day
The industry day rate is only available to members of industry who otherwise would not attend the ASEE Annual Conference and is valid for Tuesday, June 28, 2022 only. ASEE members/(co)-authors are not eligible.

Non-member Registration Rate
Please be advised that the non-member professional rate does not include ASEE membership.

Cancellation Policy
Registration and ticket cancellations must be made in writing and must be received by ASEE Annual Conference via E-mail: conferences@asee.org on or before Monday, June 13, 2022.

All cancellations made before June 13, 2022 will incur a $25 processing fee. There are no refunds after June 13, 2022.

Americans with Disabilities Act (ADA)
Registrants with special needs who participate in our conference will be accommodated to the fullest extent possible. If you need special arrangements, please advise us at the time you register at conferences@asee.org.
ASEE would like to acknowledge and thank the 2022 ASEE Program Chairs for their tireless efforts and dedication to our organization.

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<th>Division</th>
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<td>Aerospace Division</td>
<td>Tracy L. Yother</td>
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<td>Rachel Mosier</td>
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<td>Biological &amp; Agricultural Division</td>
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<td>Design in Engineering Education Division</td>
<td>Corey T. Schimpf</td>
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<td>Amardeep Kaur</td>
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<td>Engineering Design Graphics Division</td>
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<td>University of Pittsburgh</td>
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## 2022 ASEE Annual Conference

### 2022 ASEE Program Chairs

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<td>Stephanie Masta</td>
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<td>Experimentation &amp; Lab-Oriented Studies Division</td>
<td>Robby Sanders</td>
<td>Tennessee Technological University</td>
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<td>Homero Murzi</td>
<td>Virginia Polytechnic Institute and State University</td>
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<td>Krista M. Kecskemety</td>
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<td>Graduate Studies Division</td>
<td>Diane L. Peters</td>
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<td>Lisa Bosman</td>
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<td>International Division</td>
<td>Sylvia Jons</td>
<td>Institute of International Education</td>
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<td>Sean Ferguson</td>
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<td>Manufacturing Division</td>
<td>Aditya Akundi</td>
<td>University of Texas Rio Grande Valley</td>
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<td>Eliza Gallagher</td>
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<td>Mechanical Engineering Division</td>
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<td>North Carolina State University at Raleigh</td>
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<td>Mechanics Division</td>
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<td>Minorities in Engineering Division</td>
<td>Kristin Imhoff</td>
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<td>Lynn A. Albers</td>
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<td>New Engineering Educators Division</td>
<td>Ashish D. Borgaonkar</td>
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<td>Robert Kidd</td>
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<td>Software Engineering Division</td>
<td>Afsaneh Minaie</td>
<td>Utah Valley University</td>
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<td>Student Division</td>
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<td>Benjamin Kwasa</td>
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<td>Philip J. Regalbuto</td>
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<td>Women in Engineering Division</td>
<td>Kristi J. Shryock</td>
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Decisions to gather for the ASEE annual conference comes with a blend of emotions and subsequent personal decisions. Concerns surrounding networking are a source of anxiety for many. In the spirit of inclusivity and empathy, we offer a few tips to keep in mind as we navigate this new normal.

**Know Your Boundaries**
- Reflect on and determine your boundaries for in-person interactions.
- When you check-in, you’ll be able to choose a red circle, yellow square, or blue heart dot sticker for your nametag to reflect your social distancing preferences. (see sticker code below)

**Check The Sticker.**
- Take note of the color and shape of the sticker on people’s name tags and honor people’s choice.
- Remember that a genuine smile is a universal gesture for expressing excitement in lieu of other forms of engagement (handshake, hug, etc.)

**It’s Okay To Say, “I Wish I Could.”**
- Use this shared language if you struggle with determining how to respond to an uncomfortable request for a handshake, dinner invitation, etc.
- On the other hand, if someone uses this expression, there is no need to cajole them if their boundaries prevent them from further engagement.

**Resist The Urge To Ask**
- If someone is wearing a mask or practicing social distancing, you don’t need to ask why.
- Some individuals may need to, or choose to, continue to wear a mask. They have the right to choose to wear masks in public even when state or local masking mandates are not active. Please respect their choice to wear masks to protect themselves, their family and communities.

**Practice Radical Empathy!**
- One way to practice empathy is by using your words and actions to acknowledge that we all have different levels of comfort.
Initiating and supporting activities across engineering entities within The Texas A&M University System to develop the best engineers for the 21st century.

- Distinguished speaker series
- Engineering education resources and guidance
- Leading engineering education pedagogy, scholarship and innovation

Texas A&M Engineering has excellent research capabilities and facilities. Our researchers have a long track record of executing externally funded research projects to support the missions of the U.S. Department of Defense, the National Institutes of Health, the National Science Foundation, the U.S. Department of Energy, NASA, and affiliated national laboratories and industry.

- 2nd in the nation in research expenditures
  (American Society for Engineering Education)
- 6th in Graduate Program
  (Among Public Institutions)
  (U.S. News & World Report, 2023)

Providing exciting opportunities for global, transformational learning experiences for Texas A&M students

- Facilitating extensive and long-running collaborations between faculty at the Qatar and College Station campuses
- Tackling global challenges such as energy, fuels, water, health care, transportation, sustainability and infrastructure security
- Creating opportunities for global leadership through student mobility, research collaborations and international engagement

Texas A&M Engineering Experiment Station

engineering.tamu.edu  ieei.tamu.edu  www.qatar.tamu.edu
U175626 - Yoga
7:00 a.m. - 7:45 am
Exhibit Hall B & C Foyer, Convention Center
Join your friends and colleagues as we jump-start our day with a renewing stretch and meditation class!

U275581 - Registration
8:00 a.m. - 7:00 p.m.
Exhibit Hall B & C, Convention Center

U292310 - ASEE 2021/2022 Board of Directors Meeting
8:00 a.m. - 3:00 p.m.
Regency Ballroom, Hyatt Regency

U15477 - SUNDAY WORKSHOP: Engineering Education Funding Programs at the National Science Foundation and Techniques to Prepare Competitive Engineering Education Research Proposals
9:00 a.m. - 12:00 p.m.
211, Convention Center
Speakers: Christine S. Grant (Associate Dean and Professor) (North Carolina State University at Raleigh), Margret Hjalmarson (Program Director), John Jackman (Associate Professor) (Iowa State University of Science and Technology), Jill K. Nelson (Associate Professor) (George Mason University), Vinod K. Lohani (Professor) (Virginia Polytechnic Institute and State University), Jumoke “Kemi” Ladeji-Osias (Program Director) (National Science Foundation), Abby Ilumoka (Program Director) (National Science Foundation), Eric J. Sheppard (Program Officer) (Hampton University), Huihui H. Wang (Associate professor), Jong-on Hahm, Alexandra Medina-Borja (Program Director) (National Science Foundation)
Multiple funding programs at the National Science Foundation invest in leading-edge engineering education research that advances our understanding of learning, teaching, equitable participation in engineering, and institutional change at all education levels and in diverse settings. Selecting the NSF program that best fits a proposal’s creative ideas and writing a compelling project description are two critical steps in making research proposals competitive. Several NSF program directors will provide guidance on engineering education funding opportunities in the Division of Undergraduate Education (DUE), Division of Graduate Education (DGE), Division of Research on Learning in Formal and Informal Settings (DRL), and Engineering Education and Centers (EEC). Abstracts of selected awards from different programs will be distributed along with funding program solicitations to help participants identify appropriate programs. Workshop attendees will learn about proposal submission and administration processes as well as how to write better proposals. Additionally, participants will engage with Principal Investigators (PIs) of previously funded NSF projects to better understand the process of planning, crafting, and submitting engineering education research proposals from the PI perspective. Attendees will leave the workshop with a better understanding of the engineering education research programs available at the NSF as well as strategies to improve their proposals.

U15748 - SUNDAY WORKSHOP: Being the Change: Designing Research and Practice Efforts to Promote Equity and Inclusion in Engineering Education
9:00 a.m. - 12:00 p.m.
103B, Convention Center
Speakers: Cassandra J. McCall (Dr.), Stephen Secules (Assistant Professor), Maimuna Begum Kali, Stephanie Cutler (Assessment and Instructional Support Specialist)
In the US, our efforts to broaden participation in engineering are in response to a national history of exclusion of several overlapping demographic groups that include women, Black, indigenous, people of color, LGBTQ people, individuals from lower socioeconomic backgrounds, and people with disabilities. Despite significant research efforts in this area, our impacts as a scholarly community have been systemically limited by structures designed to preserve normative engineering cultures that are defined and dominated by a colonizing white masculinity. A source of this system is the marginalizing culture of undergraduate teaching, equitable participation in engineering, and institutional change at all education levels and in diverse settings. Selecting the NSF program that best fits a proposal’s creative ideas and writing a compelling project description are two critical steps in making research proposals competitive. Several NSF program directors will provide guidance on engineering education funding opportunities in the Division of Undergraduate Education (DUE), Division of Graduate Education (DGE), Division of Research on Learning in Formal and Informal Settings (DRL), and Engineering Education and Centers (EEC). Abstracts of selected awards from different programs will be distributed along with funding program solicitations to help participants identify appropriate programs. Workshop attendees will learn about proposal submission and administration processes as well as how to write better proposals. Additionally, participants will engage with Principal Investigators (PIs) of previously funded NSF projects to better understand the process of planning, crafting, and submitting engineering education research proposals from the PI perspective. Attendees will leave the workshop with a better understanding of the engineering education research programs available at the NSF as well as strategies to improve their proposals.
engineering education, which has been an unfortunately consistent finding across decades of scholarship. We can conceptualize the educational landscape as a complex system with a structural and cultural inertia that reinforces these norms over time. For engineering education researchers, this structural and cultural inertia presents a central challenge as well as a significant opportunity. As we choose our individual and collective research agendas, we should consider our contributions as change agents, examine our roles in the engineering ecosystem and how our research and practice uphold or dismantle such systems, and interrogate our traditional models of research activities, and critique and push the boundaries of our own work when it fails to initiate change. This workshop will make space for researchers, faculty developers, program directors, and instructors to intentionally reflect on their own positionalities and research aims to define impact and articulate change within their own contexts. Drawing from their perspectives, participants will learn about the literature landscape related to change-model development, reflect on their own positionalities within their work, develop and implement a change model for their research, and construct personalized foci and aims for impact and change.

U15749 - SUNDAY WORKSHOP: Using Q Methodology in Engineering Education Research
9:00 a.m. - 12:00 p.m.
103C, Convention Center

Speakers: Yang Yang (Associate Professor), Stephanie Cutler (Assessment and Instructional Support Specialist)

Are you interested in conducting research related to individual perspectives, opinions, or behavior patterns? Are you tired of using surveys all the time? Have you considered possibilities beyond the survey method? If you answered yes to most of these questions, this workshop introducing a less-known method called Q methodology (Q), is for you. Q is a way to systematically examine subjective matters, such as beliefs, behaviors, and attitudes (Stephenson, 1975). Q enables researchers to identify different perspectives on a given topic within a group and the number of individuals who hold each perspective (McKeown & Thomas, 1988). It further enables comparisons across these perspectives to reveal similarities and differences in opinions held by these groups. Q is a much more sophisticated methodology to study individual opinions or attitudes than many common research approaches such as surveys. It can provide insights into the complexity of human perspectives on any given topic in an efficient way.

U73736 - SUNDAY WORKSHOP: Peer Reviewing: Cultivating an Equitable and Inclusive Scholarly Community
9:00 a.m. - 12:00 p.m.
101H, Convention Center

Speakers: Homero Murzi (Assistant Professor), Lisa Benson (Professor), Rebecca A Bates (Professor & Chair), Karin Jensen (Prof.), Susan Kemnitzer (Retired), Gary Lichtenstein (Founder & Principal, Quality Evaluation Designs), Evan Ko (University of Illinois at Urbana - Champaign)

U91743 - SUNDAY WORKSHOP: How to Infuse Capstone Design Courses With Empathy and a Broader Range of Decision Making Approaches
9:00 a.m. - 12:00 p.m.
101J, Convention Center

Workshop facilitators will lead activities to:
• Familiarize participants with various decision-making approaches beyond the typical rational, optimized engineering tools.
• Familiarize participants with the “Six Thinking Hats” originated by Edward de Bono.
• Work to create a new, seventh “empathy hat.”
• Map out various decisions that are made during a capstone design project and which hats would be suitable for which areas/decisions.
• Brainstorm how this approach could be used in capstone courses from various disciplines.
2022 ASEE ANNUAL CONFERENCE
SUNDAY, JUNE 26th SESSIONS

U22731 - SUNDAY WORKSHOP: The Basics of Qualitative Research Methods for Librarians
9:00 a.m. - 12:00 p.m.
Greenway CDE, Hyatt Regency

Speakers: Amy S. Van Epps (Director of Sciences and Engineering Services) (Harvard University), Amy G. Buhler (Engineering Librarian) (University of Florida), Margaret Phillips (Associate Professor of Library Science) (Purdue University at West Lafayette)

This workshop provides a basic introduction to thinking about and outlining qualitative studies for librarians and information professionals in faculty and non-faculty positions who are interested in research methods to demonstrate value for a variety of purposes (e.g., external publication, presentations, and internal continuous improvement). Participants will use active learning techniques, including real-world examples, group discussion, peer sharing, and hands-on activities, and are encouraged to bring an idea for a research project to enhance their takeaways.

U27737 - SUNDAY WORKSHOP: Instructor Adaptability and the Course Complexity Typology as Tools for Faculty Development
9:00 a.m. - 12:00 p.m.
101D, Convention Center

Speakers: Homero Murzi (Assistant Professor), Heidi A. Diefes-Dux (Professor), Grace Panther (Assistant Professor)

Adaptability theory is new to the engineering education research community. This workshop will describe an adaptability theory that is useful for conceptualizing faculty development. How a faculty member’s adaptability plays out in the face of change lies in the complexity of the courses they teach. Course complexity refers to both the extent of the array of teaching practices and strategies used in a course and the challenge to implement those strategies and practices. Workshop participants will be introduced to, and allowed to practice with, the Course Complexity Typology, a tool that enables holistic classification of the complexity of instructional practices and strategies in a course. The workshop also will demonstrate how a faculty member’s adaptability relates to their course complexity by showing examples of course evolution over a three-year period.

9:00 a.m. - 12:00 p.m.
102B, Convention Center

The goal of this workshop is to provide an overview of PNMSat Engineering and a roadmap of three to five years to successfully start a PNMSat program and potentially launch an academic satellite. The underlying intent of the workshop is to emphasize the integration of education, research, and development to sustain a PNMSat program at an academic institution.

U27738 - SUNDAY WORKSHOP: Center Equity and Inclusion in Your Institution’s Faculty Development using ASPIRE’s Inclusive Professional Framework for Faculty (IPF:Faculty)
9:00 a.m. - 12:00 p.m.
101I, Convention Center

Speakers: Homero Murzi (Assistant Professor), April Dukes

As a result of attending this session, participants will:
• Learn about the Inclusive Professional Framework for Faculty (IPF:Faculty), a holistic framework of attitudes, knowledge, and skills which underlies inclusive teaching, mentoring in a research setting, advising, and being an inclusive colleague and leader.
• Participate in a sample activity that explores implementation of the framework for multiple faculty roles.
• Develop a draft plan for incorporating inclusive practices and activities based on the IPF:Faculty into programming at their own institutions.

U87744 - SUNDAY WORKSHOP: Utilization of Hands-On Projects to Introduce Fluid Mechanics for ROV Design

9:00 a.m. - 12:00 p.m.
101G, Convention Center

Speaker: Leigh S. Mccue (Associate Professor)

One of the major hurdles for introductory ROV projects is visualizing the complex fluid mechanics that govern the motion of these vehicles. A standard ROV will incorporate several thrusters to provide propulsive force, but these thrusters will all generate rotational moments about the center of mass of the ROV. These rotations are often very difficult for students to visualize. Secondly, the ROV design typically has large areas of the vessel that provide drag in the water, which can also generate moments. Between these factors and the common challenges students have with robotics, ROV projects often struggle to get started.

In this workshop, participants will be walked through a teaching activity designed to allow them to conceptualize the fluid mechanics the govern the motion of ROVs in an easy to follow methodology. Participants will then be able to utilize these skills with a robotics kit to generate an initial, simple ROV.

U27739 - SUNDAY WORKSHOP: Engineer Your Course: Using the Engineering Learning Framework for Course (re)Design

9:00 a.m. - 12:00 p.m.
101E, Convention Center

Speakers: Homero Murzi (Assistant Professor), Amy Hermundstad Nave (Faculty Developer), Sarah Bodbyl (Faculty Developer), Deb Jordan (Trefny Center Director)

To help faculty learn about effective course design and delivery, we use the Engineering Learning framework, based on modern learning and design theory, which outlines a process for designing and teaching a course. The first step in the Engineering Learning process is to create an aspirational course vision that articulates the purpose of the course, considers the students who will take the course, and identifies the skills and knowledge students should gain through the course. This critical initial step is often overlooked, resulting in the propagation of sub-optimal design throughout the rest of the course design process. Once this foundation is established, the course components—including learning outcomes, assessments, and sequence of activities—can be intentionally designed and aligned. This alignment is crucial to an effectively designed course. In this workshop, we will work through this scaffolded course design process using newly developed resources and step-by-step guides to help faculty develop a comprehensive and fully aligned framework for a course.

U28732 - SUNDAY WORKSHOP: Helping First-Year Students Catalyze Success: How to Productively Bring Serendipity, Risk, and Failure Into the Classroom

9:00 a.m. - 12:00 p.m.
200F, Convention Center

Speakers: Jessica A. Kuczenski (Academic Lecturer) (Santa Clara University), Robert Schaffer (Dr.)

U28733 - SUNDAY WORKSHOP: Evidence-based Advocacy Module for First-year Engineering Design Projects Workshop

9:00 a.m. - 12:00 p.m.
200D, Convention Center

Speakers: Callie Miller (Visiting Assistant Professor), Paul Mabrey, Macon Thompson, Kyle G. Gipson (Associate Professor) (James Madison University)

According to research from colleges and employers, fewer employers are screening job candidates based on GPA,
which makes it important for college students to capture evidence that demonstrate transferrable skills. Key attributes that the companies surveyed deem important for potential new hires are teamwork and verbal communication skills. These transferrable skills are typically communicated by graduates through describing experiences and approaches in course-based or independent projects, but the authors were curious if a highly intentional, combined pedagogical approach to teaming and communication would result in an increase in student awareness of their transferrable skills.

U31501 - SUNDAY WORKSHOP: 
How to Integrate a Course-Based Undergraduate Research Experience (CURE) into Engineering Curriculum
9:00 a.m. - 12:00 p.m.
101A, Convention Center

Research experiences are thought to be pivotal in the education and professional development of undergraduate engineering majors. Yet there are many more undergraduates than can be accommodated through traditional research internships. To meet the demand for undergraduate research experiences, Course-Based Undergraduate Research Experiences (CUREs) enable single instructors to involve large numbers of students in the excitement of cutting-edge research projects, providing them with necessary research-skill development and more fully engaging them in coursework.

U31752 - SUNDAY WORKSHOP:
How to Disseminate Entrepreneurially Minded Best Teaching Practices Through the Scholarship of Teaching and Learning (SOTL)
9:00 a.m. - 12:00 p.m.
101B, Convention Center

Speakers: Lisa Bosman (Purdue University), Karoline Jarr

SOTL is a powerful tool to disseminate knowledge about the Entrepreneurial Mindset. Equipped with SOTL tools and know-how, faculty can simultaneously elevate student learning and satisfaction while advancing their professional and academic career goals. This workshop focuses on supporting engineering educators to augment their promotion and tenure objectives with SOTL opportunities. This interactive workshop will give engineering educators the information and structure they need to conduct and discriminate research on the Entrepreneurial Mindset.

U34746 - SUNDAY WORKSHOP: 
Designing Effective International Research Experiences for Students: Evidence-Based Practices for Designing In-person and Virtual International Research Experiences
9:00 a.m. - 12:00 p.m.
102A, Convention Center

This workshop is for STEM educators at all levels who want to design new international research experiences for students or to adapt existing programs to include virtual components. The workshop leaders will share findings from two studies that included case studies of successful NSF-IRES programs, and another that included focus groups with over 40 PIs of IRES programs to discuss ways to adapt the various aspects of international research experiences to the virtual space. Workshop participants will learn about different program models and their implications for institutions, faculty, and students; the relationship between program design decisions and students’ experiences and learning; and ways to successfully incorporate virtual experiences into international research experiences. At the end of the workshop, participants will be able to make intentional choices in program structure, collaboration model, and learning outcomes.
U56289 - SUNDAY WORKSHOP: SMART Instructor Training Engineering Education Optimized for the 21st Century

9:00 a.m. - 12:00 p.m.
200C, Convention Center

Speakers: Geoffrey Recktenwald (Teaching Faculty), Ron Averill (Michigan State University), Michele J. Grimm (Michigan State University), Sara Roccabianca (Michigan State University)

SMART pedagogy is a modified-mastery approach that is specifically designed to handle 21st-century challenges in engineering education. Developed in 2016, SMART has been the subject of a collection of award-winning ASEE papers and successfully implemented at several universities in a variety of courses by a variety of instructors. This workshop is designed to train instructors on the best practices for implementing SMART pedagogy in their classes. We will cover the philosophical and scientific foundations of the method, nuts-and-bolts details on best practices for implementation, tips and advice for navigating student and peer perception, and methods for onboarding teaching teams. Workshop space is set aside for participant discussion, questions, and design for local implementation.


9:00 a.m. - 12:00 p.m.
102F, Convention Center

Moderator: Michael E. Auer

Speakers: Eleonore Lickl (Prof.), Uriel Ruben Cukierman

In connection with the Fourth Industrial Revolution, we are currently witnessing a significant transformation in the development of education, including the impact of globalization on all areas of human life, the exponential acceleration of technological developments and the necessity of flexibility and agility, and the enormous growth of engineering. To face these current real-world challenges, higher engineering education must find innovative ways to quickly respond to the new needs of engineering education. One of these is the better qualification of engineering educators in the field of pedagogy. The International Society for Engineering Education (IGIP) offers an international professional development program for engineering and engineering technology educators, which upon successful completion leads to the designation of the title Ing.Paed.IGIP and corresponding professional registration. Traditionally, the IGIP program has been offered across Europe through a network of IGIP-accredited training centers and content providers, but there is increasing interest in opportunities for becoming a formally qualified and registered professional international educator. In response, IGIP together with partners is now also active in Latin America and the US. This workshop will explore the historical and current reasons for an IGIP Prototype Curriculum for Engineering Educators, explain how to apply for IGIP International Engineering Educator certification, and a round-table discussion.

U84471 - SUNDAY WORKSHOP: Using Bio-inspired Design for STEAM Integration

9:00 a.m. - 12:00 p.m.
102D, Convention Center

Finding engineering design inspiration in nature can support student interest and efficacy in doing engineering. STEAM (science, technology, engineering, art, and math) integration can further validate and familiarize students with engineering by tapping more of their talents and concerns. In this workshop, we’ll provide strategies and examples for using bio-inspired design within P-12 integrated STEAM instruction drawing on the organizers’ forthcoming book chapter, “Bioengineering as a Vehicle to Increase the Entrepreneurial Mindset.”

U84734 - SUNDAY WORKSHOP: Semiconductor Device Simulation Tools for Wducation Using the (free) Nano HUB Cyber infrastructure

9:00 a.m. - 12:00 p.m.
208, Convention Center

This workshop will introduce instructors to open-access, cloud-based simulation tools in nanoHUB that can enhance student learning of semiconductor materials and devices. Using simulations gives students the opportunity to actively interact with abstract concepts in more concrete ways through the visualization capabilities that simulations provide. nanoHUB is a premier engineering online learning environment that has over 2 million global users annually. Funded by the US National Science Foundation, it is well known for connecting learners directly with cutting-edge research results in nanoscale engineering and science and providing access to online simulation tools. nanoHUB features educational content for a range of learning ability levels, from pre-college to post-graduate. This workshop will provide instructors with an introduction to the nanoHUB simulation environment and selected semiconductor device simulation tools, including https://nanohub.org/tools/deviceelectron and https://nanohub.org/tools/abacus, that have been used in many classes. These tools cover topics such as semiconductor crystal structures, energy band diagrams, doping, carrier concentrations, carrier mobility, freeze-out curves, Fermi-Dirac and Maxwell-Boltzmann statistics, p-n junctions, MOS capacitors, MOSFETS, and bipolar junction transistors. Simulation output includes visualizations as well as downloadable data files. Students can interactively manipulate variables within the tools to see their effect on quantities such as charge densities, electric field, electrostatic potentials, carrier concentrations, current densities, and band diagrams under bias, illumination, or at equilibrium. The workshop will provide time for participants to network and collaboratively work on plans for using these tools in their own classes. nanoHUB will provide individual follow-up support to workshop attendees to help them realize their classroom implementation plans. Participants should bring a Wi-Fi-enabled laptop computer to access and run the simulations.

U741 - SUNDAY WORKSHOP: Promoting Success of Diverse Students in Gateway Engineering Courses using STEP-Based Tutoring
9:00 a.m. - 12:00 p.m.
200B, Convention Center
Moderator: Lisa D. McNair (Professor)
and experimental skill set who will design, develop, and implement transformative autonomous technologies toward improving human health and welfare. Many universities and colleges are adopting MRE as a distinct degree program. However, there is not a well-defined and unified framework for such programs, which can cause confusion and ambiguity among instructors and future employers. To overcome this challenge, the authors, with financial support from NSF, have held workshops on the Future of Mechatronics and Robotics Engineering Education that brought together more than 150 faculty, students, and industry professionals in the MRE field to share broad success stories; develop concept inventories for MRE curricula and courses; identify thought leaders; learn recent trends in industry; and develop a roadmap for MRE education. This workshop builds on that effort to develop a unified set of courses for MRE curricula, prepare faculty to teach mechatronics and robotics courses through hands-on activities, and further expand the community of MRE educators.

U45751 - SUNDAY WORKSHOP: Engaging Students and Community Through Immersion Projects

9:00 a.m. - 12:00 p.m.
200E, Convention Center

Speakers: Sandra Furterer, William Smedick (Senior Lecturer and Director of Leadership Studies Program), Eric Specking (Assistant Dean for Enrollment Management and Retention)

Learning happens in communities as well as in laboratories and classrooms in organizations in which people perform work, serve customers, employ residents, grow revenues and reputations, and function as part of the fabric of the local community. But how can the university provide students with an opportunity to gain a sense of those processes and benefit from learning real-life lessons while they are engaged in robust education and training? How can programs gain many of the advantages of coop education and internships within the confines of the regular academic calendar? How can we engage community organizations in our teaching of entrepreneurship, engineering management, and other STEM subjects? What skills beyond engineering subject-matter expertise must students master and use to succeed in these types of experiences? And how can we structure and manage programs to avoid some of the customary problems that instructors face when involving students in the community?

U484 - SUNDAY WORKSHOP: Appropriate Evaluations of Applicants’ Diversity Statements for Improved Inclusivity and Convergent Thinking

9:00 a.m. - 12:00 p.m.
202, Convention Center

Speakers: Stephanie Adams, Teri Reed, Carmen Sidbury, Bevlee A. Watford (Associate Dean), Karan Watson (Provost Emerita and Sr. Professor)

This workshop proposes to lead participants in understanding the relationship between diversity statements and convergent thinking; the general and unique characteristics of the organizational culture the applicant desires to enter; the expectations for different levels of leadership in the organizational culture; and, finally, the development of rubrics for judging the strength of candidates’ diversity statements depending on the convergence culture and leadership position needed.

U41747 - SUNDAY WORKSHOP: Is There A Degree in This? Engineering Diversity, Equity, and Inclusion Program Directors Discuss Academic Perspectives of Their Profession

9:00 a.m. - 12:00 p.m.
102C, Convention Center

Moderator: Christopher Alexander Carr (Associate Dean & Chief Diversity Officer) (George Mason University)

Speakers: Saundra Johnson Austin (FL-AGEP Project Coordinator, University of South Florida), Darryl Dickerson (Florida International University), Amy L. Freeman (Director, Millennium Scholars Program) (Pennsylvania State University), Virginia Lynn Booth-Womack (Director) (Purdue University at West Lafayette (COE)), Enrique A. Ainsworth (Director of the Center for Excellence in Engineering and Diversity (CEED)) (University of California,
Los Angeles)

**U486 - SUNDAY WORKSHOP:**
**Developing Professional and Graduate Education Using Principles of Adult Learning**

9:00 a.m. - 12:00 p.m.

203, Convention Center

Speakers: Sunay Palsole (Assistant Vice Chancellor for Engineering Remote Education) (Texas A&M University), Randy Mcdonald (Director of Learning Design and Distance Education), Lani Draper (Instructional Designer)

Professional and graduate education has become an important part of engineering education, since it meets the key industry needs for reskilling and upskilling their technical staff. More often than not, these participants fall under the umbrella of nontraditional adult learners. Research has shown that these adult learners have a very different mindset from traditional learners, and traditional pedagogical approaches are not optimal. In contrast, andragogy is a well-established approach that adopts principles of adult learning in the design and delivery of instruction. In this active workshop, participants will (1) discuss the concepts of andragogy, (2) analyze their own syllabus and materials from a graduate or professional development engineering course to identify any gaps in which adult learning principles could be better applied, and (3) address those gaps by writing a brief plan to redesign a portion of the course. Participants will take away a written plan to transform their course to better apply the principles of andragogy.

**U503 - SUNDAY WORKSHOP:**
**Lights, Camera, Action: Captivate an Audience with your Own Scientific Film**

9:00 a.m. - 12:00 p.m.

200G, Convention Center

Speaker: Lauren Elizabeth Murphey

Learn to communicate your work by creating your own video. During this workshop, you will learn to craft your story for a specific audience, shoot and collect footage with a phone or camera, and piece together your media into an edited final video. Participants can work in teams or as individuals as they learn to create teaching films, research videos, promotional movies, supplemental material for a grant or peer-reviewed journal article, or videos to help disseminate your work to the public on social media. At the end of the workshop, participants will be armed with a plan and the skills to create their own movie. This workshop is based on lessons in the upcoming book, *The Craft of Scientific Films*, from Spring Publishing. Learn more about Lauren’s work at www.whitepaper-video.com.

**U48740 - SUNDAY WORKSHOP:**
**How to Conduct a Literature Review (Systematic & Scoping)**

9:00 a.m. - 12:00 p.m.

101C, Convention Center

Speakers: Sarah Jane Bork (Student), Adurangba Victor Oje

Whether you’re working on a chapter for your dissertation or a section of a scholarly article, writing literature reviews is tough. But there are tips that can help you conduct effective and efficient literature reviews. This workshop will provide an overview of the different types of literature reviews and the review process; discuss how to effectively conduct scholarly searches in databases; provide useful tools and software for completing the review and data management; give examples of completed reviews; and more!

**U489 - SUNDAY WORKSHOP:**
**Stratospheric Ballooning as a Low-Cost Way to Get a Taste of Spaceflight**

9:00 a.m. - 12:00 p.m.

206, Convention Center

Speakers: James Flaten (Associate Director of MN Space Grant Consortium) (University of Minnesota - Twin Cities), Erick Agrimson

Outer space, sometimes called the “final frontier” has always been difficult to reach due to the tremendous expense of rocket launches and limited launch opportunities. However, one can provide students with an educational and
unforgettable taste of spaceflight using relatively inexpensive, helium-filled (or hydrogen-filled) balloons to carry low-cost, lightweight, student-built “amateur spacecraft” into the stratosphere (aka “near-space”), which has many of the same physical properties (and view!) as outer space. This workshop will provide an introduction to the mechanics of stratospheric ballooning: launching and tracking balloons then recovering payloads landed by parachute on various types of terrain. It also will include hands-on practice building science/engineering payloads with cameras and microcontroller-logged sensors capable of being carried on balloon missions into the stratosphere. We will discuss ways to start an extracurricular ballooning program, incorporate ballooning into curricular settings, and/or use ballooning for atmospheric and remote-sensing research.

U490 - SUNDAY WORKSHOP: Communication Skills for Engineers
9:00 a.m. - 12:00 p.m.
207, Convention Center

Speaker: Kathleen Luchini Colbry (Assistant Dean, Engineering Graduate Student Services)

Strong interpersonal communication skills can foster success in both professional and personal situations. This interactive workshop, which draws from the NSF-funded CyberAmbassadors training program, invites participants to explore and practice skills for networking effectively, for talking about difficult topics, and for communicating about complex issues. Engineering students, faculty, and professionals will learn practical tools that can be applied immediately in their classrooms, research groups, and workplaces. The full CyberAmbassadors curriculum includes more than 20 hours of training in communications, teamwork, and leadership skills for interdisciplinary work. This curriculum has been adapted with permission by Tau Beta Pi, the Engineering Honor Society, to provide free professional development training for engineering students, faculty, and professionals.

U491 - SUNDAY WORKSHOP: Hands-on Interactive Learning in Fluid Mechanics and Heat Transfer with Virtual Options
9:00 a.m. - 12:00 p.m.
209, Convention Center

Speakers: Bernard J. Van Wie (Professor), Olusola Adesope (Professor), Aminul Islam Khan, Jacqueline Gartner (Assistant Professor), Zeynep Ezgi Durak

This is a ticketed session. To add this ticket to your registration, please click the button below. Participants will be trained in use of hands-on interactive pedagogy, with virtual options, for teaching concepts in fluid mechanics and heat transfer. Specific concepts consist of focuses on hydraulic loss, energy transitions in a venturi meter for measuring flow rates, and in the design and operation of double pipe and shell & tube heat exchangers. We will focus on rationale, actual hands-on sessions, data reliability, assessment, and prospects for getting involved in a national dissemination effort.

U492 - SUNDAY WORKSHOP: Creative Problem-Solving with Analogies: A Workshop for Engineering Design Educators
9:00 a.m. - 12:00 p.m.
205D, Convention Center

Speaker: Rea Lavi (Dr.)

Effective engineering design requires creative problem-solving skills. Instructors could use practical and effective methods for fostering and assessing engineering students’ ability to generate creative ideas. In this workshop, participants will practice a framework for the development of creative thinking through analogical reasoning, which is critical for discovery and invention. This framework, titled Generating Analogies by Distance and Source (GADS), is suitable for undergraduate students. It can be applied to numerous engineering design problems and used for fostering and assessing students’ analogical reasoning. The workshop will involve both individual and team activities, including collaboration, presentation, and reflection. Participants will leave with an easy-to-follow template for producing their own assignments, assignments for students,
and feedback on their assignments from other workshop participants. Additionally, key findings and examples from previous implementations of this framework will be presented.

**U493 - SUNDAY WORKSHOP:**
**Fully Engaged: Integrating Mindfulness and Meditation in Engineering Classes**

*9:00 a.m. - 12:00 p.m.*
*210, Convention Center*

Speakers: Susan F. Freeman (Teaching Professor), Kathryn Schulte Grahame (Teaching Professor), Andrew L. Gillen (Assistant Teaching Professor), Angelina Jay

This workshop will look at the art and science of mindfulness and meditation interspersed with activities used to teach and practice. The format will be hands-on, including participation in exercises as well as discussion and sharing of practices from a variety of perspectives. The content comes from various texts on mindfulness, such as *Fully Present: The Science, Art, and Practice of Mindfulness*, by Susan L. Smalley. Activities will include guided practice sessions and discussions that illustrate and elucidate the content and use of meditation and mindfulness in engineering classes. Presenting and practicing a variety of ways allows participants to customize for their comfort and knowledge, and to add on where they see the best fit.

**U494 - SUNDAY WORKSHOP:**
**Developing Reflective Engineers through Artful Methods**

*9:00 a.m. - 12:00 p.m.*
*200J, Convention Center*

Speakers: Danny D. Reible (Donovan Maddox Distinguished Engineering Chair) (Texas Tech University), Ryan C. Campbell (Postdoctoral Research Associate), Roman Taraban (Professor)

Engineering education has historically trained students to be practical, efficient, and detail-oriented. However, professional engineers must also be thoughtful and reflective so they can better understand and address the complexities of modern real-world challenges, make better ethical decisions, and better serve the public. For several years at Texas Tech University, we have been exploring and experimenting with “artful methods” or incorporating aspects of the arts and humanities in engineering education to foster reflection. The project represents the ongoing collaboration of faculty and staff from the College of Engineering, the College of Education, and the Department of Psychological Sciences, with support from the Museum of Texas Tech University, the School of Art, and others. Approaches we have used in the classroom include autobiographical writing with an accompanying art creation, reading about and discussing ethical dilemmas, and discussing stories with strong environmental justice themes. In this workshop, we will share what we have learned from multiple offerings of our graduate-level course in civil/environmental engineering while considering how it might apply to graduate and undergraduate students in all engineering majors. We will share details of our materials, methods, and experiences with fostering reflection in engineering education through the arts and humanities while providing opportunities for participants to experience the approaches themselves and explore how they might be adapted to other courses and educational contexts.

**U495 - SUNDAY WORKSHOP:**
**iDrone Hands-on Workshop for Engineering Education Communities (iDrone EE)**

*9:00 a.m. - 12:00 p.m.*
*200I, Convention Center*

Speakers: Jae Joong Ryu (Associate Professor) (University of Idaho)

This hands-on workshop is for K-12 educators interested in implementing similar STEM activities into their teaching curriculum. Participants will build their own small, educational drone from scratch using a drone kit, with the instructor providing the essential components for coding exercises using Arduino IDE and MIT Scratch to control motors along with step-by-step instructions. The instructor also will outline federal regulations and safety guidelines so that participants can fly their own drones safely and legally. Each participant must bring their own laptop computer equipped with a USB port. Participants will keep their drones and the workshop will be broadcast to accommodate online participants.
U496 - SUNDAY WORKSHOP: Applying Societal Context to Technical Design Processes

9:00 a.m. - 12:00 p.m.
201, Convention Center

Speakers: Ann-Perry Witmer (Senior Research Scientist/Lecturer), Alexandra Timmons (Visiting Staff Research Engineer) (University of Illinois at Urbana - Champaign)

This workshop will explore the foundations of Contextual Engineering, which engages engineers to explore the conditions, values, and capabilities of a target user population from a contextual perspective to better approach technical design that aligns with population needs. Activities will follow the 3-4-5 process by beginning with self-reflection to rise through the three contextual levels of user perception, exploring the four quadrants of context (global drivers, local conditions, stakeholder motivations, and process/design objectives), and identifying the relevant significance of the five contextual influences (political, cultural, economic, educational, and mechanical). Participants also will explore how to apply this contextual process to technical decision-making.

U451368 - Undergraduate Experience Committee (UEC)
All Dean and Associate Deans Meeting

12:00 p.m. - 3:00 p.m.
200A, Convention Center

This annual meeting of the UEC provides Deans and Associate Deans a time to network over lunch and to discuss undergraduate issues in an open forum. Topics for this year’s meeting include a discussion of diversity, equity, and inclusion in the context of ABET, and leadership development opportunities for Deans and Associate Deans.

U11399 - CPDD Board Meeting

1:15 p.m. - 4:30 p.m.
M100HI, Convention Center

U12167 - Software Engineering Division Technical Session 1

1:15 p.m. - 2:45 p.m.
102D, Convention Center

Schedule Risk and PERT in Undergraduate Capstone Projects

Michael Van Hilst
Reginald Paul Parker (Assistant Professor) (Embry-Riddle Aeronautical University - Prescott)

Socially Distant Active Learning and Student Engagement in Software Engineering Courses

Bruce R. Maxim (Professor)
Thomas Joseph Limbaugh (Research Assistant) (University of Michigan - Dearborn)
Jeffrey Jonathan Yackley (Graduate Student Instructor) (University of Michigan - Dearborn)

Predicting Success in Programming I

Britton D. Wolfe (Chairperson and Professor) (Grove City College)
Eli Christopher Lowry (Grove City College)

Integrating DevOps to Enhance Student Experience in an Undergraduate Research Project

Ryan Gniadek
Margaret O’Neil Ellis
Godmar Back (Assistant Professor) (Virginia Polytechnic Institute and State University)
Kirk Cameron

U15317 - Panel: Problematizing Place and Context: Voicing the Crisis at the University of Puerto Rico

1:15 p.m. - 2:45 p.m.
101C, Convention Center

In 2015, Puerto Rico no longer could pay its debt—some $70 billion for a population of about 3.5 million people. Because Puerto Rico is not covered under US federal bankruptcy law, Congress established a fiscal control board to negotiate between the Puerto Rican government and its creditors and to oversee budgets. The fiscal austerity plan that the board approved to pay off the debt made deep cuts
to public services, including the University of Puerto Rico (UPR), which saw its long-standing allocation cut in half, to $500 million. Students responded by organizing a series of strikes, starting in mid-October 2021, that closed several of the systems three research and eight regional campuses. This panel will describe the various effects and implications of these measures on students, faculty, staff, and, more broadly, on the future of the University of Puerto Rico; discuss the implications for US programs that collaborate with UPR; and highlight the need for spaces where counternarratives are necessary to achieve equity and access to engineering. The hope is to draft a statement for the ASEE leadership to endorse, which university offices of government relations can give to their congressional representatives.

**U15707 - ERM: Lessons Learned from COVID (COVID Part 1)**

1:15 p.m. - 2:45 p.m.

**101D, Convention Center**

**Moderators:** Keith A. Schimmel (Professor) (Olivet Nazarene University), Kirsten Heikkinen Dodson (Associate Professor and Chair Mechanical Engineering)

**Speaker:** Stephanie Cutler (Assessment and Instructional Support Specialist)

What have we learned from COVID? Come to this session and find out!

**Advantages and Disadvantages of a Virtual Engineering Experience During COVID-19 for Blind and Low-Vision High School Students**

Theresa Green
Daniel Kane (Utah State University)
Gary M. Timko (Research Associate)
Natalie L. Shaheen
Wade H. Goodridge

**Student Experiences with the Online Learning Environment During COVID**

Maartje E. D. Van Den Bogaard (Research Fellow)
David Reeping (Assistant Professor)
Cynthia J. Finelli (Professor)

**Work In Progress: Effects of COVID-19 Pandemic on Engineering Students’ Sense of Belonging and Learning**

Matthew Sheppard
Aradaryn Marsh (Clemson University)
Lisa Benson (Clemson University)

**Within-team Task Choices: Comparison of Team-based Design Project Engagement in Online and Face-to-face Instruction**

Marcia Gail Headley (Data Scientist)
Jenni Buckley (Associate Professor) (University of Delaware)
Haritha Malladi (Assistant Professor and Director of First-Year Engineering)

**Finding a Place to Belong: Understanding the Role of Place in Developing Learner Identity Among Students Returning to In-person Learning**

Diana G. De La Rosa-pohl (Instructional Associate Professor)

**WIP: Exploring Differences in Student Sense of Belonging Inside and Outside the Engineering Classroom**

Isabel Hilliger (Associate Director of Assessment and Evaluation)
Maria Javiera de los Rios
Gabriel Astudillo
Jorge Baier (Associate Dean of Engineering Education)

**U15728 - ERM: Year of Impact on Racial Equity**

1:15 p.m. - 2:45 p.m.

**Nicollet A, Hyatt Regency**

**Moderator:** Jeremi S. London (Associate Professor)

**Speaker:** Stephanie Cutler (Assessment and Instructional Support Specialist)

The ASEE Commission on Diversity, Equity, and Inclusion (CDEI), with support from the ASEE Board of Directors, has designated the Society year 2021–2022 as the Year of Impact on Racial Equity (YIRE). CDEI seeks to build on the social and racial justice momentum of 2020 and equity work of ASEE members to truly impact racial equity in engineering, engineering technology, engineering education, and our professional organization. This session highlights some of the work in progress in support of YIRE.

**WIP: ASEE Year of Impact on Racial Equity: Impetus & Vision**

Jeremi S. London (Associate Professor)
Homero Murzi (Assistant Professor)
Elizabeth Litzler (Director) (University of Washington)

**WIP: ASEE Year of Impact on Racial Equity: 90 Day Equity Challenge**

Jeremi S. London (Associate Professor)
Yareni P. Lara-Rodriguez (University of Puerto Rico, Mayaguez)
U17328 - Energy and Environmental Education in a Diverse and Inclusive Classroom

1:15 p.m. - 2:45 p.m.
206, Convention Center

Moderator: Matt Aldeman (Associate Professor)

Speakers: Bala Maheswaran (Professor), Veera Gnaneswar Gude (Associate Professor) (Mississippi State University), Tooran Emami (Associate Professor), Ramanitharan Kandiah (Central State University)

Panelists will discuss the challenges to advancing energy and environmental engineering education, especially in a diverse and inclusive classroom, and other social and economic injustices. This session will cover: energy systems, innovation, and education in a diverse and inclusive classroom; university-industrial-government partnership in energy-system innovation to prepare engineering students for 2030+; the impact of the Internet of Things (IoT) and Big Data in the energy and environmental systems; environmental issues in innovative energy systems; and envisioning resilient and sustainable energy systems for underrepresented communities.

U19140 - Engineering Design Graphics Division Technical Session 3

1:15 p.m. - 2:45 p.m.
200G, Convention Center

Video Game to Teach Fluid Mechanics (Work in Progress)
Hadi Kazemiroodsari (Wentworth Institute of Technology)
Yetunde Folajimi

Developing the Spatial Skills of Neurodiverse Students
Sheryl A. Sorby (Professor) (University of Cincinnati)
Savannah Stark (PhD Student) (University of Cincinnati)
Christina Carnahan (University of Cincinnati)

Comparison of Spatial Visualization Skills Scores for Entry-Level Cohorts
Jorge Rodriguez (Professor)
Diana Bairaktarova (Assistant Professor) (Virginia Polytechnic Institute and State University)

WIP: Incorporating GDT into Engineering Graphics Courses
Steven Nozaki (Associate Teaching Professor)
Nancy E. Study (Associate Teaching Professor)

Student Reflections Encourage Self-Regulated Learning and Faculty Just-In-Time Teaching
Lulu Sun (Professor)
Chad Rohrbacher (Associate Director of CTLE) (Embry-Riddle Aeronautical University - Daytona Beach)

U2119 - Aerospace Division Technical Session: Sustainability and the Workspace

1:15 p.m. - 2:45 p.m.
205C, Convention Center

Exploratory Study of Sustainability Courses in Collegiate Level Engineering Programs
Shantanu Gupta
2022 ASEE ANNUAL CONFERENCE
SUNDAY, JUNE 26th SESSIONS

2022 ASEE ANNUAL CONFERENCE
ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Mary E. Johnson (Professor) (Purdue University at West Lafayette (PPI))

Student Paper: Engine Wash and Sustainability in an Engineering Technology
Seongjun Ha (Purdue University at West Lafayette (COE))
Gita Andhika Swastanto (Purdue Polytechnic Graduate Programs)
Tracy L Yother (Assistant Professor)
Mary E. Johnson (Professor) (Purdue University at West Lafayette (PPI))

Preliminary Identification and Analysis of Encoding Errors in GA Pilot Weather Reports (PIREPs)
Shantanu Gupta
Mary E. Johnson (Professor) (Purdue University at West Lafayette (PPI))

Similarities and differences between the actions of newly-hired engineers and engineering managers during the organizational socialization period
Yun Dong (Ms)
Subhanwit Roy (Iowa State University of Science and Technology)
MacKenzie Ann Reber (Miss)

U2280 - Engineering Libraries
Technical Session 1: Library Services

1:15 p.m. - 2:45 p.m.
101I, Convention Center

Moderator: J. Denice Lewis (Research and Instruction Librarian for Engineering and Science) (Wake Forest University)

Speakers: Leena N. Lalwani (Associate Director, HS-STEM/Engineering Librarian), Nancy J. Allee (Director, Taubman Health Sciences Library & STEM) (University of Michigan), Qianjin Zhang, Wendy Robertson (The University of Iowa), Kari Kozak (Director, Lichtenberger Engineering Library) (The University of Iowa), Sara Scheib (The University of Iowa), James M. Cox (The University of Iowa), Amanda Bartel (The University of Iowa), Qianjin Zhang

Using Esploro to Increase Visibility of Engineering Faculty Research Work

Qianjin Zhang
Wendy Robertson (The University of Iowa)
Kari Kozak (Director, Lichtenberger Engineering Library) (The University of Iowa)
Sara Scheib (The University of Iowa)
James M. Cox (The University of Iowa)
Amanda Bartel (The University of Iowa)

Preparing the Engineering Library of the Future: Changing Services, Structures, Staffing, and Resources - A Case Study
Leena N. Lalwani (Associate Director, HS-STEM/Engineering Librarian)
Nancy J. Allee (Director, Taubman Health Sciences Library & STEM) (University of Michigan)

Sustainable Boutique Research Services in a Mid-sized STEM Library: A Preliminary Study
Brianna B Buljung (Teaching & Learning Librarian)
Lisa G. Dunn (Librarian) (Colorado School of Mines)
Seth Vuletich (Visiting Scholarly Communications Librarian)
Emily Bongiovanni (Carnegie Mellon University)

U87165 - Ocean and Marine Division Technical Session 1

1:15 p.m. - 2:45 p.m.
102C, Convention Center

Moderator: Lynn A. Albers (Assistant Professor)

Speakers: Thomas W Denucci (Associate Professor), Leigh S Mccue (Associate Professor), Byul Hur (Assistant Professor), Shaoping Xiao (Assistant Professor) (The University of Iowa), Nathan M. Kathir (Associate Professor and Director of Senior Projects)

This session will showcase the technical papers submitted to the Ocean and Marine Engineering Division.

Marine Icing on a Commercial Crabbing Vessel in the Gulf of Alaska: Accident Study
Thomas W. Denucci (Associate Professor)
Daniel Brahan
brielle pearce (United States Coast Guard Academy)
Nolan J
Rasa Kirvelevicius (United States Coast Guard Academy)
William Paul Anderson (United States Coast Guard Academy)

Navy Science and Technology Program: Pathways to Careers in the Navy and Supporting Industries
Shaoping Xiao
James Buchholz (Associate Professor) (The University of Iowa)
Venanzio Cichella

**Work-in-Progress: Development of a new hands-on STEM program for biologically inspired maritime robotics**
Leigh S Mcue (Associate Professor)
Adrian Hagarty
Cameron Nowzari (George Mason University)
Ali Khalid Raz
Michael Vincenzo Riggi (George Mason University)
Jessica Rosenberg
Daigo Shishika
Cynthia Smith (Associate Professor) (George Mason University)
Jill K. Nelson (Associate Professor)

**Educational Small Scale Underwater Robot Development via a Capstone Project in Engineering Technology**
Byul Hur (Assistant Professor)
Mohammed Alvi (Texas A&M University)

**Design and Fabrication of an Accelerated Corrosion Chamber for Naval Applications**
Nathan M. Kathir (Associate Professor and Director of Senior Projects)

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**U26146 - Environmental Engineering Division Technical Session 1**

**1:15 p.m. - 4:30 p.m.**
**205D, Convention Center**

**Moderator: Fethiye Ozis (Assistant Teaching Professor)**

Speakers: Cara J. Poor (Associate Professor) (University of Portland), Michael A. Butkus (Professor of Environmental Engineering) (United States Military Academy), Andrew Schulz, Maya Menon, Andrew Ross Pfluger (Associate Professor) (United States Military Academy)

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**Development of a Low-Cost Constructed Wetlands Experiment**
Cara J Poor (Associate Professor) (University of Portland)
Kyla Burrill
Mason Jarvis

**The Green Escape Room: Part 1 – A Race to Solve an Environmental Engineering Problem by Applying Engineering Principles and Deciphering Clues and Puzzles**

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Michael A. Butkus (Professor of Environmental Engineering) (United States Military Academy)
Kathryn Blair Newhart (Assistant Professor) (United States Military Academy)
Andrew Ross Pfluger (Associate Professor) (United States Military Academy)

**A Thematic and Trend Analysis of Engineering Education for Sustainable Development**
Maya Menon
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)
Marie C. Paretti (Professor)

**Examination of Environmental Engineering Topics Taught in United States Federal Service Academies and Senior Military Colleges**
Andrew Ross Pfluger (Associate Professor) (United States Military Academy)
Stephanie Laughton (The Citadel)

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**U27206 - Faculty Development Division Technical Session 7**

**1:15 p.m. - 2:45 p.m.**
**200E, Convention Center**

**Moderator: Sunay Palsole (Assistant Vice Chancellor for Engineering Remote Education) (Texas A&M University)**

Speaker: Homero Murzi (Assistant Professor)

**Work in Progress: Designing a Sustainable Mechanism for Discursively Navigating Change**
Jennifer A. Turns (Professor)
Yen-Lin Han (Associate Professor)
Kathleen E. Cook (Dr.)
Gregory Mason (Seattle University)
Teodora Rutar Shuman (Professor and Chair) (Seattle University)

**Mentoring Engineering Educators with an Entrepreneurial Mindset – Focused SOTL Professional Development Experience**
Lisa Bosman (Faculty)
Nathalie Duval-couetil (Associate Professor and Director)
(Purdue University at West Lafayette (COE))

**WIP: Perceptions of Effective Engineering Faculty-to-Faculty Mentorship Practices**
Jennifer Hadley Perkins (student)
Adam R. Carberry (Associate Professor)
U27269 - Cultivating Faculty Growth through the Eco-STEM Peer Observation Process
1:15 p.m. - 2:45 p.m.
Lakeshore C, Hyatt Regency

Speakers: Homero Murzi (Assistant Professor), Silvia Heubach, Corin (Corey) Bowen

This workshop will lead participants through a discussion of the review process, how peer review can help build an equitable and inclusive scholarly community, and how reviewers can contribute to the process. Through interactive discussions, small group activities, and individual reflection, participants will explore the role of peer review and how they fit into the process, quality criteria for scholarship in engineering education, equitable and inclusive practices when applying those criteria in the peer-review process, and aspects of a high-quality peer review. A whole group discussion will identify common themes, best practices in writing constructive and insightful reviews, and how peer reviewing contributes to equity and inclusion in engineering education research. The session will wrap up with providing a list of resources and instructions for signing up to be reviewers for the National Science Foundation and for engineering education journals.

U281 - Beyond the Monolith Discussion: Research about Latina Students in Engineering
1:15 p.m. - 4:30 p.m.
Lakeshore B, Hyatt Regency

U96 - Biological and Agricultural Engineering Division Technical Session 2
1:15 p.m. - 2:45 p.m.
103B, Convention Center

Surveying Student Interest in the Biological Systems Engineering Major
Jennifer Mullin (Faculty)
Gail Michelle Bornhorst

How (Inter)national Engineering Faculty Members Perceive and Teach Creativity: A Cultural Perspective
Hao He (University of Missouri - Columbia)
Heather Hunt (Assistant Professor)
Suzanne Burgoyne
Joshua Saboorizadeh

Grid Soil Sampling and Mapping Soil Phosphorus Distribution for an Extended Period on a Production Agricultural Field
Abhijit Nagchaudhuri (Professor)
Madhumi Mitra (Professor)
Travis Ford
Charles Raleigh (University of Maryland Eastern Shore)

U28223 - First-Year Programs Division Technical Session 5: Design and Robotics
1:15 p.m. - 2:45 p.m.
101E, Convention Center

Moderators: Haritha Malladi (Assistant Professor and Director of First-Year Engineering), J. Blake Hylton (Assistant Professor of Mechanical Engineering) (Ohio Northern University)

Implementation of Graphical Visualization Techniques and Robotics Labs in ‘Introduction to Engineering’ Course
Akbar M. Eslami (Professor)
Chandra Bhushan Asthana (Associate Professor) (Elizabeth City State University)
Kuldeep S. Rawat (M.D. Thorpe Endowed Professor & Dean) (Elizabeth City State University)

Online Robotics Project-based Learning Approach in a First-year Engineering Program
Olukemi Akintewe
Walter Alejandro Silva Sotillo (University of South Florida)

Weaving Failure Analysis into a First-Year Robotics Project
Kathleen A. Harper (Assistant Professor) (Case Western Reserve University)
Richard Freuler

Changes in Achievement Goal Profiles of students in a Highly Active Design Thinking Classroom
Lakshmy Mohandas
Wonki Lee (Teaching Assistant)
Nathan Mentzer (Assistant Professor) (Purdue University at West Lafayette (COE))

Driving the conversation of social and educational influences in human-centered design biases among first-year engineering students
Megan Hammond
Joan Martinez
Elizabeth Ziff

Maria Elena Truyol
A Post-Transfer Pathways Program for Improving Transfer Success in Undergraduate Computing and Engineering
Danyelle Tauryce Ireland (Associate Director / Research Assistant Professor)
Jordan Esiason
Amanda Menier (Data Analyst)
Rebecca Zarch (Director)

Revisions and Analysis of Transfer Pathway in First-Year Engineering
Jennifer Lovely (Dr) (University of Kentucky)
Matthew Sleep (Lecturer) (University of Kentucky)

U28224 - First-Year Programs Division Technical Session 6: Admissions, Transfer Pathways, and Major Selection

Factors in the Selection of a Major by First-Year Engineering Students
Michael Elmore (Director) (State University of New York at Binghamton)
Koenraad E Gieskes (Interim Director)
Nicole Alfarano (State University of New York at Binghamton)

Rethinking the admission processes to higher education in Engineering: the case of a university in Chile
Marcela Cárdenas (Universidad Andres Bello)

U29149 - Graduate Studies Division Technical Session 4

A Study of Well-being among College of Engineering Graduate Students
Yaoling Wang (Instructional Designer/Graduate Student)

Exploring the Relationship Between Culture and Science, Engineering, and Mathematics Graduate Students’ Mental Health
Sarah Jane Bork (Student)
Nicholas Young (University of Michigan)
Joi-lynn Mondisa (Assistant Professor)

Visualizing Stress and Relief: How stressors and coping mechanisms interact in engineering graduate student experiences
Jacob Troutman (Graduate Student)
Darby Rose Riley
Kaitlin Mallouk (Assistant Professor)

U30212 - Computers in Education 8 - Video Technology

This session will focus on video technology innovations to enhance education.
The Design of Interactive Video Modules using Asset-based Participatory Design Thinking to Increase Student Engagement in Engineering

Jianyu Dong (Associate Dean) (California State University, Los Angeles)
Jim Kuo
John Christopher Bachman (Assistant Professor) (California State University, Los Angeles)
Pearl Chen (Professor) (California State University, Los Angeles)

Work-in-Progress: Relationship of Students’ Class Preparation and Learning in a Flipped Computer Programming Course

Kwansun Cho (Instructional Assistant Professor)
Saira Anwar (Texas A&M, Department of Multidisciplinary Engineering)

Work-in-Progress: Rapid Development of Advanced Virtual Labs for In-Person and Online Education

Yiyang Li
Yuzhong Shen (Dr.) (Old Dominion University)
Pauline Delacruz (Old Dominion University)
Charles I. Sukenik (Professor of Physics and Chair) (Old Dominion University)
Brian Sanders (Associate Professor, College of Aeronautics) (Embry-Riddle Aeronautical University - Worldwide)
Justin Mason (Old Dominion University)

Adaptive Virtual Assistant for Virtual Reality-based Remote Learning

Hannah Ava Sloan (University of Calgary)
Richard Zhao (Assistant Professor)
Faisal Aqlan
Hui Yang (Pennsylvania State University)
Rui Zhu

A Remote Communication System Teaching Laboratory

John W. Pierre (Professor)
Mohammad Sohorab Hossain (University of Cincinnati)
Sanjay Hosur (Union College)
Dongliang Duan (University of Wyoming)
Robert F. Kubichek (Emeritus Professor) (University of Wyoming)

U3143 - Industrial Engineering Division Technical Session 1

1:15 p.m. - 2:45 p.m.
200B, Convention Center

Moderator: Kathryn Abel

Data Analytics in an Industrial and Systems Engineering Curriculum

Kathryn Abel

Success Factors in a Project-Based Industrial Engineering Senior Design Capstone Course

Michael Daniel Sherwin (Assistant Professor)
Alison Linares Mendoza (University of Pittsburgh)
Renee M. Clark (Director of Assessment) (University of Pittsburgh)

A Study on the Effectiveness of using Integrated Nonlinear Storytelling and Simulation-based Learning Game in an Operations Research Course

Omar Ashour (Associate Professor of Industrial Engineering) (Pennsylvania State University, Behrend College)
Ashley Seamon (Pennsylvania State University, Behrend College)
Christian Enmanuel Lopez (Assistant Professor) (Lafayette College)
Sababattin Gokhan Ozden (Assistant Professor)
Daniell DiFrancesca (Assistant Professor of Educational Psychology) (Pennsylvania State University, Behrend College)
Conrad Tucker (Professor) (Carnegie Mellon University)

An Overview of the Multi-Disciplinary Data Science (MDaS) S-STEM Scholarship Program

Manuel D. Rossetti (University Professor) (University of Arkansas)
Bryan Hill (Associate Dean)
Ronna C. Turner (University of Arkansas)
Wenjuo Lo (University of Arkansas)

U32151 - Instrumentation Division Technical Session 2

1:15 p.m. - 2:45 p.m.
102A, Convention Center

The papers in this session describe projects that encountered significant instrumentation challenges. These authors relate how they defined the problems, found insightful
Maskbot: Indoor Traffic Control
Asad Yousuf (Professor) (Savannah State University)

Enabling Generic Sensing Devices to use LoRa Communication
Ciprian Popoviciu (Assistant Professor) (East Carolina University)
Colby Sawyer

U337 - Revisiting the Grand Challenges
1:15 p.m. - 2:45 p.m.
Greenway ABIJ, Hyatt Regency

In this session, several institutional GCSP leaders will share their perspectives on the “Grand Challenges” that are the focus of GCSP student activities in their institutions. Brief presentations will be followed by a discussion focused on the ways in which the GCSP Network could broaden the range of appropriate “Grand Challenges” beyond the scope of the original 14 GCs identified by NAE. The discussion may be furthered to understand how the GCSP Network may embrace other similar global goals (such as UN Sustainable Development Goals) or whether and how it may establish different guiding principles for the focus of students’ activities.

U85450 - ETD - A Technology Potpourri I
1:15 p.m. - 2:45 p.m.
205B, Convention Center

‘All Together Now’ - Integrating Horizontal Skills in CareerTechnical Education Classes with Making and Micro-manufacturing
Osazuwa John Okundayye (Graduate Researcher)
Qing Li
Shaoping Qiu (Postdoc) (Texas A&M University)
Malini Natarajarathinam (Associate Professor)
Sharon Lynn Chu (University of Florida)

Mathew Kuttolamadom (Associate Professor) (Texas A&M University)

A.S. degree Career Pathway within the Florida State College System that includes a Professional Engineering License
Marilyn Barger (Dr.)
Richard Gilbert (Professor) (University of South Florida)
Sam Ajlani

Innovative University-Based Regional Workforce Development Experience
Matthew S. Anderson

Students’ Lived Experiences with the Integrated STEM Activities
Maram H Alaqa
Bugrahan Yalvac (Associate Professor) (Texas A&M University)
Michael Johnson (Professor)
Jennifer Whitfield (Instructional Associate Professor) (Texas A&M University)
Jay Porter
Mathew Kuttolamadom (Associate Professor) (Texas A&M University)

U85451 - ETD - A Technology Potpourri II
1:15 p.m. - 4:30 p.m.
205B, Convention Center

Apropos Students Temporal Exam Effort and Performance
Corinne Mowrey (Assistant Professor) (University of Dayton)
Khalid Zouhri (Assistant Professor)
Jacob Allen Cress (Assistant Professor) (University of Dayton)
Carson Lee Running (Ph.D.) (University of Dayton)
Kayla Nulph
Raymond Smith

5S Program Implementation in Homeowner’s Garage: A Case Study
Samia Afrin (Assistant Professor)
Christopher Hudson

Using Shaking Table Experiments for Material Characterization and Vibration Analysis (WIP)
Ahmad Fayed (Assistant Professor)
Genesis Alegria Aguilar (Southeastern Louisiana University)

Automated Door System with Thermal Scan
U86116 - NEE Technical Session - Innovative Teaching Strategies I

1:15 p.m. - 2:45 p.m.
200H, Convention Center

Moderators: Derek Breid, Peter Walls

Speaker: Ashish D Borgaonkar (Assistant Professor)

A Comprehensive Study on The Effectiveness of Active Learning Techniques in Remote Learning Classes
Amr Hassan (Assistant Professor)
Ahmed Dallal (Professor)
Mohamed A. S. Zaghloul

Creating TikToks, Memes, Accessible Content, and Books from Engineering Videos? First Solve the Scene Detection Problem
Lawrence Angrave (Teaching Professor)
Jiaxi Li (University of Illinois at Urbana - Champaign)
Ninghan Zhong (University of Illinois at Urbana - Champaign)

Maintaining an Engaging Remote Learning Environment: A study of instructors’ tactics and students’ perspectives during the pandemic
Mohamed A. S. Zaghloul
Amr Hassan (Assistant Professor)
Ahmed Dallal (Professor)

Work in Progress: Understanding Student Learning Profiles in Second-Year Problem-Solving Engineering Classes
Yael Gertner (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)
Juan Alvarez (Teaching Assistant Professor)
Benjamin Cosman (University of Illinois at Urbana - Champaign)
Jennifer R Amos (Teaching Professor) (University of Illinois at Urbana - Champaign)

U34258 - International Division Technical Session 3 - Humanitarian Design

1:15 p.m. - 2:45 p.m.
103C, Convention Center

Moderator: Sylvia Jons (Global Programs and Fellowships Lead)

Connecting Education Abroad with an in-class EWB International Challenge Project
Thomas J. Siller (Associate Professor) (Colorado State University)
Abigale Johnson
Samantha Fischer (Colorado State University)
Matthew R. Lurtz

Improving Communication Skills in Global Engineers: Adapting the UNESCO Story Circles Method in Undergraduate Engineering Programs
Awatef Omar Ergai (Kennesaw State University)
Shane D. Peterson
Ginny Zhan (Kennesaw State University)
Sabine H. Smith

“Engineer’s Name is Diana”: Contextualizing Secondary School Girls’ Engineering Education through Engineering Self-Belief Assessments in Rural Zimbabwe and Senegal
Noah Bezanson
Nafissa Aïda Maïga
Dhinesh Radhakrishnan (Purdue University at West Lafayette (COE))
Jennifer Deboer (Assistant Professor of Engineering Education) (Purdue University at West Lafayette (COE))

Collaboration between XXX University in Guatemala and YYY University in the US on Humanitarian Engineering Projects for Computer Scientists and Engineers
Pritpal Singh (Professor)

U37156 - Materials Division Technical Session 1

1:15 p.m. - 2:45 p.m.
103A, Convention Center

Moderators: Timothy Chambers, Kaitlin Tyler (Academic Development Specialist)

Speakers: Breejha Sene Quezada (Purdue Engineering
Identifying Students’ Connections to Advanced Topics in an Introductory Materials Engineering Course
Breejha Sene Quezada (Purdue Engineering Education)
Emily Marie Haluschak (Graduate Student) (Purdue University at West Lafayette (COE))
Congying Wang (Purdue University at West Lafayette (COE))
Amanda Johnston
Aileen Claire Ryan (Purdue University at West Lafayette (COE))
Katherine Schieltz
Tamara J Moore (Professor of Engineering Education) (Purdue University at West Lafayette (COE))

Material selection in Electric Vehicle Engineering Programs
Claes Fredriksson
Boel Maria Ekergard (Ass. Prof)

Work in Progress: Motivation and Interest on the Design and Optimization of 3D-Printed ABS and PLA Scaffolds
Nabila Shamim (Dr) (Prairie View A&M University)
Anh Nguyen (Prairie View A&M University)
Sheena M. Reeves (Prairie View A&M University)
Ariful Bhuiyan

Constructing Quadratic Equations modulo N to emphasize the differences between real and modular arithmetic operations
Carlos Salazar
Constantine Macris (United States Coast Guard Academy)

Enhancing Student Engagement in Engineering Materials Science using KEEN Mindset in Laboratory Activities
Hui Shen (Associate Professor)
Joshua Gargac (Ohio Northern University)

U38157 - Remediation and Curricular Changes to Improve Student Learning and Outcomes
1:15 p.m. - 2:45 p.m.
200D, Convention Center
Moderators: Girish Upreti, Gianluca Guadagni (Assistant Professor Applied Mathematics)
A sustainable model to structurally improve outcomes in Math courses for Engineering students.
Gianluca Guadagni (Assistant Professor Applied Mathematics)
Hui Ma (Assistant Professor) (University of Virginia)

Curricular and Strategic Changes in mathematics to
Enhance Institutional STEM Education
Sandie Han
Boyko Kostadinov (Associate Professor) (New York City College of Technology)
Janet Liou-Mark (Professor Emeritus of Mathematics) (New York City College of Technology)
Johann Thiel (New York City College of Technology)

Promoting Women and Minorities in Engineering - A Summer Program for Incoming Freshmen
Allen Guest (Clemson University)
Jason Brown

MATH 101: An Adaptive Remedial Course
Jose Roberto Portillo (Mr.)
Alberth E Alvarado (Department of Applied Mathematics)
Byron Haroldo Linares Roman

U39283 - Joint Session: Entrepreneurially-Minded Learning in the Classroom
1:15 p.m. - 2:45 p.m.
Minnehaha, Hyatt Regency
Speaker: Bijan Sepahpour
Joint technical session between the Mechanical Engineering Division, Mechanics Division, and Entrepreneurship & Engineering Innovation Division.
Exploring the Impact of Project-based Mechatronics Course Design on Alumni’s Entrepreneurial Career Pathways
Timo Bunk (Stanford University)
Sheri Sheppard (Professor) (Stanford University)
Helen L. Chen (Research Scientist) (Stanford University)

Developing and Assessing a Renewable Energy Design Project that Embeds Entrepreneurially Minded Learning in
an Introductory Thermal Sciences Course
Melissa Gibbons

Introducing Entrepreneurially-Minded Learning to a New Cohort of Faculty
Anna K. T. Howard (Teaching Professor)

Making Learning Goals More Apparent Across the Curriculum for Mechanical Engineering Fundamentals and Depth Courses
Adrianna Larson (South Dakota School of Mines and Technology)
Brian Alumbaugh
Micah Lande (Assistant Professor)

Impact of Scaffolding ‘Making’ Assignments within Mechatronics on the Three Student Learning Outcomes of KEEN’s Entrepreneurial Mindset: Curiosity, Connections, and Creating Value
Vinayak Vijayan (University of Dayton)
Shanpu Fang
Skyler Miller (University of Dayton)
Megan Reissman (Dr.) (University of Dayton)
Timothy Reissman (Assistant Professor) (University of Dayton)

U91102 - DEED Technical Session 8 - Design Methodologies
1:15 p.m. - 2:45 p.m.
101G, Convention Center
Moderator: Bob Rhoads (Multidisciplinary Capstone Program Director)

Work-In-Progress: Teaching Innovation, Design Thinking, and Leadership through Origami
Robert Benjamin Simon (Academic Professional)
Lauren Stewart (Georgia Institute of Technology)
Wayne Li (Oliver Professor of Practice) (Georgia Institute of Technology)
Larissa Simoes Novelino (Georgia Institute of Technology)

Design Equations Developed by Geometric Programming
Robert C. Creese (Professor Emeritus) (West Virginia University)

Design and Engineering Education for sustainability
Emelia Delaney
Wei Liu (Dr)

Future of Mechanical Engineering, Manufacturing Engineering, And Machinist Roles for Industry 4.0
Erin Peiffer
Francisco X. Plaza (Mechanical Engineer)
Sahar Shamsi
Elizabeth Collins
Ashley C Huderson (Manager of Engineering Education) (American Society of Mechanical Engineers)

A Framework for Implementing Design for Additive Manufacturing Methods in First-Year Engineering Curriculum: Investigating the effects of specialized training on engineering design and student self-efficacy
Lisa K. Murray
Joseph Ekong
Seyed Niknam (Western New England University)
Michael J. Rust (Associate Professor) (Western New England University)

Developing design ethnography interviewing competencies for novices
Michaela Grover (Product Design Graduate Student) (University of Minnesota - Twin Cities)
Natasha Wright (University of Minnesota - Twin Cities)
Jennifer Margaret Hoody (University of Minnesota - Twin Cities)
Carlye Lauff (University of Minnesota - Twin Cities)

U91215 - DEED Technical Session 9 - Design Across the Curriculum
1:15 p.m. - 2:45 p.m.
101H, Convention Center
Moderator: George D. Ricco (Assistant Professor) (University of Indianapolis)

Scaffolding reflection across the design curriculum: Triangulating Student, Alumni, and Faculty Perspectives of the Role of Design within an Engineering Science Program
Rubaina Khan (University of Toronto)
Lisa Romkey (Associate Professor, Teaching Stream) (University of Toronto)

Co-Designing Design Activities with Undergraduate Students
Christopher Rennick (Engineering Educational Developer)
Michael Lenover (University of Waterloo)
Eugene Li (Mechatronics Engineer in Training) (University of Waterloo)
Sanjeev Bedi (Professor and Director) (University of Waterloo)

WIP: A Comparison and Assessment of Capstone and Cornerstone Students’ Perceptions of the Application of
ABET Design Criteria
Kathryn Schulte Grahame (Teaching Professor)
Courtney Pfleger (Teaching Professor)

The DesignSpine: Evolution of an Authentic Project-Based Integration of Design in an Engineering Curriculum
Kenneth Reid (Associate Dean and Director of Engineering) (University of Indianapolis)
George D. Ricco (Assistant Professor) (University of Indianapolis)
David Olawale (Assistant Professor) (University of Indianapolis)
Md Rashedul Hasan Sarker (University of Indianapolis)

Modularity Analysis of Makerspaces to Determine Potential Hubs and Critical Tools in the Makerspace
Samuel Enrique Blair (Texas A&M University)
Henry David Banks (Georgia Institute of Technology)
Garrett Hairston (Texas A&M University)
Julie S Linsey (Professor)
Astrid Layton (Assistant Professor) (Texas A&M University)

U9150 - CIT Division Technical Session #1
1:15 p.m. - 2:45 p.m.
M101C, Convention Center

Moderator: Mudasser Fraz Wyne (Professor)

Speakers: Barry M. Lunt (Director â€“ School of Technology) (Brigham Young University), Elizabeth Milonas, Sam B Siewert (Associate Professor) (California State University, Chico), Byul Hur (Assistant Professor)

Multi-Semester Course Staffing Optimization
Mudasser Fraz Wyne (Professor)
Alireza Farahani
Esmaeil Atashpaz-gargari
Lu Zhang (National University)

U401 - CIPD Board Meeting
1:15 p.m. - 2:45 p.m.
M100A, Convention Center

CIPD Board Meeting

U41114 - Minorities in Engineering Division Technical Session 3
1:15 p.m. - 2:45 p.m.
212, Convention Center

Moderators: Rochelle L. Williams (Chief Programs Officer) (National Society of Black Engineers), Catherine Didion (Senior Program Officer) (National Academy of Engineering)

GPA Patterns of Black Mechanical Engineering Students (Work in Progress)
Jessica Allison Manning (Graduate Research Assistant)
Catherine Mobley (Dr.) (Clemson University)
Marisa K. Orr (Associate Professor)
Catherine E. Brawner (President)
Rebecca Brent (President)
Michael L. Tidwell

Black is Gold: The Importance of Racial Identity to Black Undergraduate Students in Engineering
Whitney Gaskins (Assistant Dean of Inclusive Excellence and Community Engagement) (University of Cincinnati)
Samieh Askarian (University of Cincinnati)

Preparation of Female and Minority PhD and Post-Docs for Careers in Engineering Academia (Experience)
Nidaa Makki
Teresa J. Cutright (Professor) (The University of Akron)
Linda Coats (Professor, College of Education, Mississippi State University)
Rebecca Kuntz Willits (Chairperson) (Northeastern University)
Tonya W. Stone (Assistant Professor) (Mississippi State University)
**2022 ASEE ANNUAL CONFERENCE**  
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**U83139 - Engineering and Public Policy Division Technical Session**

**1:15 p.m. - 2:45 p.m.**

**102E, Convention Center**

**Moderator: Daniel Sanchez (Postdoctoral Fellow) (University of Pennsylvania)**

Speakers: Siqing Wei, Lina Zheng (Tsinghua University), Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education), Daniel Sanchez (Postdoctoral Fellow) (University of Pennsylvania), Rocio C. Chavela Guerra (Visiting Research Professor) (Rowan University), Stephanie Farrell (Professor and Department Head), Anindya Roy (Dr.) (Massachusetts Institute of Technology), Aaron Kessler (Massachusetts Institute of Technology), Barry I. Hyman (Professor) (University of Washington), Sandra Allain (Professor of Practice, Director Law, Policy, and Engineering), Yongxin Deng, Tuoyu Li, Min Ye

**New Engineering Education initiative of China: A Policy Debrief**

Siqing Wei  
Lina Zheng (Tsinghua University)  
Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education)

**MELP, an innovative Master of Engineering degree bridging Engineering, Law, and Policy**

Sandra Allain (Professor of Practice, Director Law, Policy, and Engineering)

**Demographic Data Collection of LGBTQ+ Identities: Barriers and Motivations**

Daniel Sanchez (Postdoctoral Fellow) (University of Pennsylvania)  
Rocio C. Chavela Guerra (Visiting Research Professor) (Rowan University)  
Stephanie Farrell (Professor and Department Head)

**U42203 - Multidisciplinary Engineering Division Technical Session - PBL with Control Theory, Writing, ABET, and Shaping Ethical Worldviews**

**1:15 p.m. - 2:45 p.m.**

**207, Convention Center**

**Moderators: Cynthia Wise Barnicki (Professor), Anna Engelke**

**Work-in-Progress: Examining how faculty formal and multidisciplinary networks shape ethical worldviews**

Samuel Aaron Snyder (Graduate Research Assistant)  
Diana Bairaktarova (Assistant Professor) (Virginia Polytechnic Institute and State University)

**Using Project Based Learning (PBL) with Control Theory**

Stephen Andrew Wilkerson (Assistant Professor)  
Stephen Andrew Gadsden (Associate Professor)  
Andrew Lee (University of Maryland Baltimore County)

**Work in Progress: Writing in Engineering Faculty Fellows**

Jennifer R Brown (Associate Professor)  
Ellen Lauchnor (Associate Professor) (Montana State University - Bozeman)  
Michelle Miley (Writing Center Director, Assistant Professor of English)  
Corey Pew (Assistant Professor) (Montana State University - Bozeman)  
Adrienne Phillips (Associate Professor)  
Beth J Shirley (Assistant Professor) (Montana State University - Bozeman)
Stephanie G Wettstein (Associate Professor)

Work-in-Progress: Monitoring the Attainment of ABET Student Outcomes and Projected Achievement of Program Educational Objectives by Cohort
Ismail Haltas

U42204 - Multidisciplinary Engineering Division Technical Session - Integrated Engineering and Interdisciplinary Impacts
1:15 p.m. - 2:45 p.m.,
210, Convention Center

Moderators: Duncan Davis (Associate Teaching Professor), Stephanie Lunn

The STEM Center to Promote Undergraduate Education and Research at Sam Houston State University
Faruk Yildiz (Professor) (Sam Houston State University)
Adrian Villalta-cerdas
Taylor E Martin (Sam Houston State University)
Mary B. Swarthout (Sam Houston State University)

Work in Progress: How do Students Describe Engineering and Engineers After Taking a Sociotechnical Energy Course?
Marissa H. Forbes (Research Associate)
Susan M. Lord (Professor & Chair)
Gordon D Hoople (Assistant Professor) (University of San Diego)
Diana Chen (Assistant Professor of Engineering) (University of San Diego)
Joel Alejandro Mejia (Dr.)

A Community Framing of Integrated Engineering
Rebecca A. Bates (Professor & Chair)
Susan M. Lord (Professor & Chair)
Emanuela Tilley (Professor & Director)
Jenna P. Carpenter (Dean of Engineering) (Campbell University)

Exploring Interdisciplinary Contributions to More Sustainable Solutions in the Built Environment and Infrastructure Development Students
Holbein Josué Velásquez (Civil Engineer)
Miguelandres Guerra (Civil Engineering and Architecture)
Milagros Izel Jimenez (Civil Engineering)

Assessing Student Impacts from an Interdisciplinary Summer Research Program Modeled on Problem-Based Learning
Charles E. Pierce (Associate Professor, College of Engineering and Computing) (University of South Carolina)
Gurcan Comert

U53118 - WIED: Analysis, Challenges, Success, and Impacts
1:15 p.m. - 4:30 p.m.
102A, Convention Center

Moderators: Roberta Rincon (Associate Director of Research), Kaitlyn Anne Thomas (Student), Megan Conrad (Dr.) (University of Detroit Mercy)

Papers related to analysis, challenges, success, and impacts to WIED

Analysis of Enrollment and Graduation Rates by Gender Over 10 Years
Heather Orser
Ella Swanson-Hysell (University of St. Thomas)

Graduating in the Margins: An Analysis of Graduations Rates of Minoritized Women in Computing
Shaundra Bryant Daily (Professor of the Practice)
Christin Danelle Shelton
Andy He
Wanda Eugene
Jakita Thomas

Gender Differences in First-Year Engineering: Peer Connections in the time of COVID-19
Sery Gunawardena
Krista M. Kecskemety (Associate Professor of Practice)

Overcome Gender Discrimination in STEM Using the Case Study Method
Coleen Carrigan (Assistant Professor) (California Polytechnic State University, San Luis Obispo)
Liesl Folks (Senior Vice President for Academic Affairs and Provost)
Laurene M. Tumiel Berhalter (University at Buffalo, The State University of New York)

Gender Diversity in Undergraduate Engineering: Understanding the Major Selection Process
Lori M Houghtalen (Associate Dean, College of Arts and Sciences) (Abilene Christian University)
Timothy Kennedy (Executive Director of Engineering)
Jody Jones (Assistant Professor of Finance)
M. Suzanne Clinton (Assistant Dean, College of Business)
2022 ASEE ANNUAL CONFERENCE
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(University of Central Oklahoma)
Kimberly L. Merritt (Professor of Business) (Oklahoma Christian University)

A Systematic Literature Review of Women’s Epistemologies in Engineering Education
Kaitlyn Anne Thomas (Student)
Adam Kirn (Associate Professor)
Kelly J. Cross (Assistant Professor)

Female Student Attitudes Towards Engineering: Are They Influenced by the Roles They Take on Project Teams?
Malinda S Zarske (Teaching Professor)
Evan Elizabeth Wetzel (University of Colorado Boulder)
Christina N Lacerenza (University of Colorado Boulder)

Evaluating Computer-Aided Design Software as a Barrier to Women’s Engagement in Engineering: A Focused Literature Review
Elizabeth DaMaren (University of Toronto)
Alison Olechowski (Assistant Professor) (University of Toronto)

Challenges of Students in STEM: A Closer Look at How Female Engineering Student Experiences Vary Compared to Those of Other STEM Students
Megan Conrad (Dr.) (University of Detroit Mercy)
Alexa Rihana Abdallah (Professor) (University of Detroit Mercy)
Lauren Ross

Academic performance and factors that influence the desertion of engineering students: a study with a gender approach
Cristian Saavedra-acuna (Profesor)
Monica Quezada-Espinoza

Reflections on an Introduction to Project Based Engineering in an Incarcerated Setting
Rob Sleezer (Associate Professor, Twin Cities Engineering)
Nicolle Revello
Morgan Round
Kristen O’Connell
Benjamin Orlin
Andrew David Roberts (Professor) (Minnesota State University, Mankato)

The Community College Pathway: A Study of Women in STEM
Roberta Rincon (Associate Director of Research)
Erin Carll
Emily Knaphus-soran (Senior Research Scientist) (University of Washington)

U55141 - Engineering Ethics Division: Approaches to Ethics Education (Part 1)
1:15 p.m. - 2:45 p.m.
201, Convention Center
Moderator: Rockwell Clancy

Speaker: Natalie C.T. Van Tyne (Associate Professor of Practice)

Ethical Decision-Making Frameworks for Engineering Education: A Cross-Disciplinary Review
Vignesh Subbian (Assistant Professor) (The University of Arizona)
Colleen Lynel Halpin (University of Arizona)

A Short Course in Engineering Ethics: Opportunities and Challenges for Pedagogy and Assessment
Courtney E Holles (Teaching Professor) (Colorado School of Mines)

Abstract: Talk (Engineering) Ethics to Me: Student Group Discussions about Ethical Scenarios
Richard Tyler Cimino (Senior Lecturer)
Jennifer Pascal (Associate Professor in Residence)
Angad D. Chadha (New Jersey Institute of Technology)
Katrin Girgis (New Jersey Institute of Technology)
Aml Fatima Khan (New Jersey Institute of Technology)
Michelle Ortiz (New Jersey Institute of Technology)
Scott Streiner (Visiting Assistant Professor, Industrial Engineering Department)

Virtue in Engineering Ethics Education
Kenneth McDonald

Virtue Ethics in Robotics: An ethics module to cultivate character and ethical reasoning
Erin Henslee (Assistant Professor) (Wake Forest University)
Adetoun Yeaman (Engineering Education Postdoctoral Fellow)
Joseph Wiinikka-lydon (Dr.) (Wake Forest University)

U5691 - Miscellaneous Mechanics
1:15 p.m. - 2:45 p.m.
200J, Convention Center
Moderators: Jonathan Aurand (Associate Professor), Aldo A. Ferri (Professor)
Come hear some new perspectives on a variety of topics in mechanics, and stick around afterwards, because this session will spawn very interesting discussions.

Impact of Instructional Methods on Student Performance, Engagement, and Knowledge Retention: A Simultaneous Comparison of a Reflective versus Direct Approach to Fluid Mechanics

Joshua Richard Wyrick (York College of Pennsylvania)
Emine Celik Foust (Associate Professor) (York College of Pennsylvania)

Hiring instructional faculty improves student achievement in large foundational engineering mechanics courses.

James Lord (Collegiate Assistant Professor)

Work-in-Progress: Polytechnic Perceptions of the Engineering Classroom Experience

Devin Berg (Associate Professor)
Anne Schmitz (University of Wisconsin - Stout)

Grade Prediction Model Using Regression Analysis: an Implementation in Engineering Mechanics

Nicolas Ali Libre (Missouri University of Science and Technology)

U597 - SPONSOR TECH SESSION: Applications of the Analog Discovery Board to Upper-Level Electrical Engineering Courses - Presented by Digilent

1:15 p.m. - 2:45 p.m.
101B, Convention Center

Speakers: Cory J. Prust (Associate Professor) (Milwaukee School of Engineering), Steven Holland (Milwaukee School of Engineering)

This workshop explores creative ways to utilize the Analog Discovery to provide students with hands-on experimentation with more advanced concepts typical of upper-division electrical engineering courses. Unique approaches utilize the broad suite of measurement tools on the Analog Discovery platform. Demonstrations include applications in transmission lines, signals and systems, analog electronics, and communication system theory.

U605 - SPONSOR TECH SESSION: Teaching with MATLAB and Simulink Using Your Learning Management System (LMS) - Presented by MathWorks

1:15 p.m. pm - 2:45 p.m.
101A, Convention Center

Speakers: Jeffrey Alderson (Online Learning Product Marketing), Gen Sasaki (Customer Success Engineer), Hoda Sharifi (Dr.) (MathWorks)

In this session, attendees will get hands-on experience with tools for teaching with MATLAB and Simulink within a Learning Management System (LMS) from the perspective of both learners and instructors. This session is applicable to any instructor who is currently teaching, considering, or planning to teach an academic topic with MATLAB and Simulink at secondary, undergraduate, or graduate academic levels. Attendees will be invited to enroll in an LMS-based course that showcases MathWorks teaching offerings prior to the session. Attendees will be able to try and explore self-paced training content and autograded MATLAB-based assignments, as well as other MathWorks cloud-based tools for teaching and learning. In addition, all attendees will leave the session with access to resources, including a copy of the workshop course, courseware, examples, and online training, to help increase engagement of their students in courses. Attendees will learn how to: Combine instructor-authored content with MATLAB teaching tools; Assign off-the-shelf, self-paced learning content for teaching MATLAB skills; Integrate labs, courseware, and textbooks authored by MATLAB power users; Assess student learning with automated assessments using MATLAB GraderReport on learner progress in the LMS gradebook for MATLAB and Simulink tools. Please Attendees are asked to bring a laptop or tablet device with a keyboard in order to participate in the hands-on exercises. Speakers:Jeff Alderson, MathWorksGen Sasaki, Customer Success Engineer, MathWorksHoda Sharifi, Customer Success Engineer, MathWorks
U62 - Equity, Culture & Social Justice in Education Division Technical Session 2

1:15 p.m. - 2:45 p.m.
205D, Convention Center

Moderator: Jacques C. Richard (Instructional Associate Professor/Aerospace Engineer)

Passing Along Experiential and Learned Understandings of Inequality: Marginalized Communities are Shapers of Humanitarian Engineers

Emma Sophie Stine
Tiera Tanksley (University of Colorado Boulder)

Piloting a JEDI (Justice, Ethics, Diversity and Inclusion) Technology Ethics Living and Learning Community

Matt Gordon (Professor & Chair) (University of Denver)
Scott Leutenegger

Moving Towards Data-Driven Departmental DEI

Dustyn Roberts (Senior Lecturer)
Robert W. Carpick (Professor & Chair)
Igor Bargatin

Examination of Ableist Educational Systems and Structures that Limit Access to Engineering Education through Narratives

Autumn Cuellar
Brady Edward Webster
Sakshi Solanki (Utah State University)
Catherine MCGough Spence (Assistant Professor) (Minnesota State University, Mankato)
Marissa Tsugawa

U7182 - Civil Engineering Division ASCE Liaison Committee - Accreditation and Curriculums - What Changes Are Occurring?

1:15 p.m. - 2:45 p.m.
M100J, Convention Center

Moderators: Scott R. Hamilton (Professor, Civil Engineering), Ronald W. Welch (Professor) (The Citadel)

The purpose of the ASCE Liaison Committee’s sessions is to explore several of the key educational and professional issues of strategic importance to the civil engineering profession that are being addressed (or should be addressed) by ASCE and/or other civil engineers. This specific session includes papers addressing the civil engineering curriculum along with ABET accreditation.

A Comparison of Licensed Engineers’ Conduct Requirements, the ASCE Code of Ethics, and EAC-ABET Civil Engineering Accreditation Criteria

Matthew Swenty
Brian J. Swenty (Professor)

Identifying Obstacles to Master’s Level ABET EAC Accreditation

Norb Delatte (Professor)
Camilla M. Saviz (Professor and Chair)
Audra Morse
Brock E. Barry (Director, Civil Engineering) (United States Military Academy)

Practical Use of the Civil Engineering Body of Knowledge

Bradley Aldrich (Consultant) (American Society of Civil Engineers)
Norma J. Mattei (Professor) (University of New Orleans)
Kleio Avrithi (Assistant Professor)
Jennifer Hofmann (Manager, Professional Advancement)
Anthony Kulesa
Kenneth J. Fridley (Senior Associate Dean for Administration) (The University of Alabama)

Proposed Engineering Accredited Curriculum

Sami Alshurafa
Laura Wieserman
Hanan Alhayek (Director at SHSD Engineering Design)
Khaled H Hussein (Associate Professor)

Preparing the Future Civil Engineer: ASCE’s Proposed Revision of the ABET Civil Engineering Program Criteria

Leslie Nolen (Director, Educational Activities)
Jay A. Puckett (Professor) (University of Nebraska - Lincoln)
David A. Dzombak (Hamerschlag University Professor and Department Head) (Carnegie Mellon University)
Wayne R. Bergstrom
U88715 - PCEE Session 2: Teacher Learning Experiences
1:15 p.m. - 2:45 p.m.
200F, Convention Center
Moderator: Stacy S Klein-Gardner (Adjunct Professor)
Speakers: Rebekah J Hammack (Assistant Professor), Allison Antink-Meyer, Abeera P. Rehmat (Research Scientist, II) (Georgia Institute of Technology)

Exploring pre-service elementary teachers’ engineering teaching efficacy beliefs: A confirmatory analysis study (Fundamental)
Rebekah J Hammack (Assistant Professor)
Ibrahim H. Yeter (Post Doctoral Researcher)

Teachers’ Curiosity About Engineering, Engineered Objects and Phenomena and Their Confidence for Teaching Elementary Engineering (Fundamental)
Allison Antink-Meyer
Ryan Brown

K-2nd Grade Teachers’ Perceptions of Computational Thinking: Research Findings and Implications for Integrating Engineering and Computational Thinking in Elementary Education (Fundamental)
Abeera P. Rehmat (Research Scientist, II) (Georgia Institute of Technology)
Hoda Ehsan (Director of Quadrivium Design and Engineering) (The Hill School)
Monica E. Cardella (Director, School of Universal Computing, Construction and Engineering Education) (Florida International University)

Biologically Inspired Design for Engineering Education: A Multiple Year Evaluation of Teachers’ Professional Learning Experiences (Evaluation)
Abeera P. Rehmat (Research Scientist, II) (Georgia Institute of Technology)
Alexandra Towner
Meltem Alemdar (Georgia Institute of Technology)
Roxanne Moore
Michael Helms (Dr.)
Jeffrey H. Rosen (Program Director) (Georgia Institute of Technology)
Julia Varnedoe (Research Associate II)
Marc Weissburg

U88716 - PCEE Session 3: Robotics and Design Competitions
1:15 p.m. - 2:45 p.m.
200I, Convention Center
Moderator: Manuel Alejandro Figueroa (Associate Professor)
Speakers: Anurag Purwar (Associate Professor), Arif Sirinterlikci, Lauren Harter (VEX Robotics), J Chris Carroll (Associate Professor and Civil Engineering Program Coordinator) (Saint Louis University), Robert Deters (Associate Professor) (Embry-Riddle Aeronautical University - Daytona Beach)

Effectiveness of a Virtual-Physical Robotics Teaching Platform on Engaging Middle-to-High School Students during COVID-19 (Evaluation)
Anurag Purwar (Associate Professor)
Amanjeet Bagga (Stony Brook University)
Cynthia Colón (Stony Brook University)
Imin Kao (Associate Vice President, Economic Development) (Stony Brook University)

Learning Robot Programming Anywhere: VEXcode VR (Other)
Arif Sirinterlikci
Jason McKenna (VEX Robotics)
Yuhan Lin
Raina Oravec
Lauren Harter (VEX Robotics)

VEX V5 Workcell: Industrial Robotic Arm Model for STEM Education (Other)
Arif Sirinterlikci
Jason McKenna (VEX Robotics)
Lauren Harter (VEX Robotics)

How to Spice up Your Balsawood Bridge Competition (Other)
J. Chris Carroll (Associate Professor and Civil Engineering Program Coordinator) (Saint Louis University)
Kyle Mitchell (Associate Professor) (Saint Louis University)

Impact of moving an international aviation design competition to a virtual environment: challenges, benefits, and lessons learned (Evaluation)
Robert Deters (Associate Professor) (Embry-Riddle Aeronautical University - Daytona Beach)
Jeffrey V. Coppola  
Ralph Kenneth Coppola (Executive Director, Real World Design Challenge)

**U726 - Equity, Culture & Social Justice in Education Division Technical Session 3**

*1:15 p.m. - 2:45 p.m.*

**102B, Convention Center**

**Moderator: Benjamin Lutz**

**Role of diverse teams and socio-cultural aspects on students learning in freshman design course**

Raghu Pucha (Principal Lecturer) (Georgia Institute of Technology)  
Terri Dunbar  
Ruth Yow (Georgia Institute of Technology)

**Social Justice Curriculum in Thermal Systems and Mechanical Systems Design: What Motivates Students to Engage?**

Lauren Anne Cooper (Assistant Professor)  
Jennifer M. Peuker (Assistant Professor) (California Polytechnic State University, San Luis Obispo)  
Erin Kay Moss (California Polytechnic State University, San Luis Obispo)  
Jaxon Silva (California Polytechnic State University, San Luis Obispo)

**Scaffolding Social Justice in the Engineering Classroom: Constructing a More Restorative, Inclusive, Engineering Practice**

Sydney Turner (PhD Candidate) (University of Virginia)  
Patrick Illand Hancock (University of Virginia)  
Bethany Gordon (University of Virginia)  
Tomeka Carroll  
Katelyn Stenger (Doctoral Fellow) (University of Virginia)

**Mixed results for gendered patterns in confidence of team success and collective efficacy**

Rebecca Matz  
Mark Mills (University of Michigan)  
Robin Fowler (Lecturer IV)  
Caitlin Hayward  
Madison Jeffrey (University of Michigan)  
Andrew Moffat (University of Michigan)

**Honors Minor program focused on “Engineering Positive and Intentional Change”**

Kathryn O’Harra (Dr. Kathryn O’Harra)

**U7263 - Architectural Engineering Division Technical Session 2**

*1:15 p.m. - 2:45 p.m.*

**102F, Convention Center**

**Moderator: Rania Al-hammoud (Dr.)**

**Heuristic reasoning through Community-Engaged Learning in the architectural design process (work-in-progress)**

Eugene Kwak (Assistant Professor)

**Building Science Identity Among First-Year Engineering Students Through a Community-Based Project**

Rania Al-hammoud (Dr.)  
Vaishnavi Naresh Pasalkar (Undergraduate Student)  
Andrea Jonas (Dr.) (University of Waterloo)

**Exploring Advantages of the Implementation of a Peer-Assessment Tool in a First-Year Undergraduate Course**

Rania Al-hammoud (Dr.)  
Vaishnavi Naresh Pasalkar (Undergraduate Student)

**COVID-19 Impacts on Architecture Educators in India- A review of gender perceptions**

Sandeep Langar (Dr.) (The University of Texas at San Antonio)  
Rachel Mosier (Associate Professor)  
Sanjeev Adhikari (Dr.) (Kennesaw State University)

**U73293 - Safe Zone Ally Training - Level 1**

*1:15 p.m. - 2:45 p.m.*

**Lakeshore A, Hyatt Regency**

**Speakers: Alon V Mccormick (Professor), Hadas Ritz (Senior Lecturer)**

Safe Zone Workshops are interactive, research-informed workshops for students, faculty, and the professional community, during which participants will build the knowledge and skills needed to create a more inclusive and affirming environment for LGBTQIA+ individuals in engineering. The workshops have been developed by a community of science and engineering professionals and
students, specifically for a STEM audience. Faculty, students, administrators, staff, and other professionals are encouraged to participate in these workshops. The Safe Zone Level 3 Trans Allyship workshop explores transgender-specific terms and concepts, the climate for trans individuals in society and in STEM and its broader implications, and action strategies for trans allies. ASEE Safe Zone Ally Training workshops are supported by the National Science Foundation through grants EEC-1539140 and EEC-1748499. To learn more and access free ally resources, please visit https://lgbtq.asee.org.

**U93238 - Transfer Programs at Two-Year Colleges in Engineering and Engineering Technology**

**1:15 p.m. - 2:45 p.m.**  
**209, Convention Center**

**Speaker:** Philip J. Regalbuto (Instructor)

The state of engineering and engineering technology transfer programs at two-year colleges

**ASPIRE West Texas Regional Collaborative: A Mentoring Model For Future Faculty**
- Agniprava Banerjee (University of Texas at El Paso)
- Sara E. Rodriguez (University of Texas at El Paso)
- Benjamin C. Flores (Professor) (University of Texas at El Paso)

**Rural HSI and eHSI Colleges Consensus Report**
- Mara Lopez
- Caroline Vaningen-dunn (Director)

**A Transformative Project between Two-State Colleges and a 4-year Institution for Student Success in STEM**
- Ali Zilouchian (Professor) (Florida Atlantic University)
- Nancy Romance (Dr) (Florida Atlantic University)
- Hanqi Zhuang (Professor) (Florida Atlantic University)

**Two-Year College and External Project Manager: An Innovative Partnership for Implementing a Federal Grant Project**
- Alicia Kiremire
- Gerry Caskey
- Michael K. Swanbom (Distinguished Lecturer) (Louisiana Tech University)
- Matthew Brady Johnson (Louisiana Tech University)

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**U73294 - Queerness in STEM Book Panel**

**1:15 p.m. - 2:45 p.m.**  
**Lakeshore B, Hyatt Regency**

Speakers: Kelly J Cross (Assistant Professor), Stephanie Farrell (Professor and Department Head), Emily Alicia Affolter (Prescott College Faculty), Christian Matheis (Visiting Assistant Professor)

The panel will explore the authors’ experiences in writing their chapter or serving as a co-editor of Queering STEM Culture in US Higher Education: Navigating Experiences of Exclusion in the Academy. The book addresses US cultural norms that create an inequitable status quo, privileging heterosexual while disenfranchising the queer community. Each panelist will introduce themselves and articulate their experience on the project. The panel will conclude with responses to audience questions.

**U75534 - Greet the Stars! New Members & First Timers Orientation**

**3:00 p.m. - 4:30 p.m.**  
**Ballroom B, Convention Center**

New members as of 1/1/22 are eligible to attend, as well as first-time Annual Conference attendees. Come hear what ASEE membership and the Annual Conference are all about. Presented by the VP of Membership, Brian Self. Space is limited; tickets are first-come, first-served.
U75572 - PIC I Meeting
3:00 p.m. - 4:30 p.m.
M100A, Convention Center

U75573 - PIC II Meeting
3:00 p.m. - 4:30 p.m.
M100B, Convention Center

U75575 - PIC III Meeting
3:00 p.m. - 4:30 p.m.
M100C, Convention Center

U75576 - PIC IV Meeting
3:00 p.m. - 4:30 p.m.
M100D, Convention Center

U511 - ABET SESSION - Becoming a Program Evaluator Might Be for You!
3:00 p.m. - 4:30 p.m.
101C, Convention Center
Speaker: Jennifer Brock (Associate Dean for Academics and Professor) (University of Alaska Anchorage College of Engineering)
Each year, more than 2,000 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 6) The program evaluator “life cycle”

U75577 - PIC V Meeting
3:00 p.m. - 4:30 p.m.
M100E, Convention Center

U73299 - Diversity, Equity, and Inclusion: 100
3:00 p.m. - 4:30 p.m.
Lakeshore A, Hyatt Regency
Speakers: Meagan Pollock, Brianna Benedict McIntyre (Graduate Research Assistant), Christina Alston
Diversity, equity, and inclusion starts with us. This session aims to answer the questions: What is DEI? Why should I care about it? What work do I need to do to become a more equitable educator? In this workshop, participants will identify ways in which we can expand our awareness through self-analysis. Participants will engage in learning activities that provide an introductory overview of DEI, including reflection on their identities, privileges, biases, spheres of influences, and beliefs related to diversity, equity, and inclusion.

U55189 - Engineering Ethics Division: Approaches to Ethics Education (Part 2)
3:00 p.m. - 4:30 p.m.
201, Convention Center
Moderators: Adetoun Yeaman (Engineering Education Postdoctoral Fellow), Joseph Meyer (University of Illinois at Urbana - Champaign)
Can You Feel It? A Case for Reflexive Response and Imagination in Ethics Discussions [Evidence-Based Practice Paper]
Scott A. Civjan (Professor)
Yousef Jalali
Work in Progress: Personalizing Engineering Ethics through the Individual Stories of Engineers and People Impacted
Angela R. Bielefeldt (Professor)
Expanding the Boundaries of Ethical Reasoning and Professional Responsibility in Engineering Education Through Critical Narratives
Jeff R. Brown (Professor of Civil Engineering)
Leroy L. Long (Associate Professor of Engineering Fundamentals) (Embry-Riddle Aeronautical University - Daytona Beach)
**U498 - Test ASEE Speaker Session**  
3:00 p.m. - 4:00 p.m.

**U56611 - US Bank Stadium Tour**  
3:00 p.m. - 4:30 p.m.  
US Bank Stadium, 401 Chicago Ave, Minneapolis Minnesota 55415

**U41236 - Minorities in Engineering Division Technical Session 4**  
3:00 p.m. - 4:30 p.m.  
212, Convention Center  
*Moderators: Olukemi Akintewe, Bethany Jean Klemetsrud*

- Designing International Research Experiences to Engage Underrepresented Minority Undergraduates and Introduce Them to Graduate School
  - Samuel Paul Merriweather (Associate Director)  
  - Michael Preuss (Co-founder and Lead Consultant)  
  - John Albert Avila (Texas A&M University)  
  - Karen L. Butler-purry (Assoc Prov for Graduate Studies) (Texas A&M University)  
  - Shannon Walton (Assistant Dean)  
  - Maria Claudia Alves (Senior Director, Halliburton Engineering Global Programs) (Texas A&M University)  
  - Ahmarlay Myint (Program Specialist)  
  - Keisha D Bahr (Assistant Professor) (Texas A&M University - Corpus Christi)  
  - Kim Withers (Associate Professor) (Texas A&M University - Corpus Christi)  
  - Hua Zhang (Texas A&M University - Corpus Christi)  
  - James Derek Hogan  
  - Barbara Szczesniak (Professor) (Texas A&M University - Corpus Christi)

**Mentoring Approaches that Support Minoritized STEM Undergraduates: A Pilot Study (EBR)**
- Sarah Jane Bork (Student)  
- Nagash Clarke (Student)  
- Joi-lynn Mondisa (Assistant Professor)

**GradTrack Scholars: A comprehensive online mentoring program to build community and prepare the next generation of underrepresented minority graduate students (Work in Progress)**
- Jacqueline E McDermott (Associate Director of Graduate Diversity and Inclusion) (Purdue University at West Lafayette (COE))  
- Janet Beagle

**Work in Progress: Self-Advocacy as a Framework for Supporting Academic Success of Minoritized Graduate Students**
- Carmen Lilley

**U48499 - Student Panel: Getting Started and Staying Active in ASEE**  
3:00 p.m. - 4:30 p.m.  
101G, Convention Center

**U12205 - Software Engineering Division Technical Session 2**  
3:00 p.m. - 4:30 p.m.  
102D, Convention Center

**WIP: Integrating Modern Development Practices into a Software Engineering Curriculum**
- Walter W. Schilling (Professor Software Engineering) (Milwaukee School of Engineering)

**An Integrated Software Engineering Curriculum Through Project-Based Learning (PBL)**
- Yalda Afshar (University of Calgary)  
- Mohammad Moshipour (University of Calgary)  
- Emily Ann Marasco (Instruction, Program Director) (University of Calgary)  
- Jalal Kawash (University of Calgary)  
- Laleh Behjat  
- Mahmoud Moussavi (Senior Instructor) (University of Calgary)

**Educational Driving Simulator to Monitor Driver’s Eye Movement and Heart Rate via a Capstone Project in Engineering Technology**
U2180 - Aerospace Division Technical Session: Pedagogy and Training

3:00 p.m. - 4:30 p.m.
205C, Convention Center

An Exploration of Concept Mapping as a Reflective Approach for Instructors When Evaluating Problem Design Intent

Andrew Olewnik (Assistant Professor)
Scott M. Ferguson (North Carolina State University at Raleigh)
Nadeem Sheikh (North Carolina State University at Raleigh)
Amrith Mariappan (University at Buffalo, The State University of New York)
Laine Schrewe (The State University of New York, College at Buffalo)

Learning Outside the Classroom - Applying a Design, Development, and Testing Exercise to Augment the Early-Stage Undergraduate Aerospace and Mechanical Engineering Experience

Francisco Bueno
Henry Thomas Wright (Graduate Student) (Saint Louis University)
Shaun Johnson Samuel (Saint Louis University)
Srikanth Gururajan (Saint Louis University)

Student Paper: Assessment of System Integration Workshop of a CubeSat as an Effective Tool for STEAM Education, a Work-in-progress Case Study

Claudia Rolón
Cristhian David Coronel
Hector Samuel Velazquez
Derlis Ortiz Coronel
Jorge H. Kurita (Research Professor)

U22142 - Engineering Libraries Technical Session 2: Instruction

3:00 p.m. - 4:30 p.m.
101I, Convention Center

Moderator: Brianna B Buljung (Teaching & Learning Librarian)

Speakers: Bridget Smyser, Jodi Bolognese, Haoyong Lan (Engineering & Data Librarian), Weiling Liu (University of Louisville), Jean L Bossart (Engineering Librarian)

Promoting active learning in an engineering library

Jean L Bossart (Engineering Librarian)
Sara Gonzalez

Using a Knowledge Mapping Tool in Engineering Information Literacy Instruction: A First Experiment

Haoyong Lan (Engineering & Data Librarian)
Weiling Liu (University of Louisville)

Assessing Information Literacy in Capstone Design Projects: Where are students still struggling?

Bridget Smyser
Jodi Bolognese
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U28255 - First-Year Programs Division Technical Session 7: Teamwork, Reflection, and Wellness

3:00 p.m. - 4:30 p.m.
101F, Convention Center

Moderators: Campbell R. Bego (Assistant Professor), Whitney C. Blackburn-Lynch (Lecturer)

Increasing Students’ Group Processing Ability in a First-Year Engineering Design Course Through Scaffolded Team Reflection Exercises
Chamille Lescott (Graduate Student)

Students’ Perception of Peer-to-Peer Evaluations in a Project-Based First-Year Engineering Course
Dr. Constantine Mukasa

Creation and Implementation of Mental Wellness Initiatives in First-Year Engineering with Faculty Development
Whitney C. Blackburn-lynch (Lecturer)
Matthew Sleep (Lecturer) (University of Kentucky)

Using Sentiment Analysis to Evaluate First-year Engineering Students Teamwork Textual Feedback
Abdulrahman M. Alsharif (Graduate Research Assistant) (Virginia Polytechnic Institute and State University)
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)
David B. Knight (Associate Professor and Special Assistant to the Dean for Strategic Plan Implementation) (Virginia Polytechnic Institute and State University)
Saleh Zayed Alatwah (Data Scientist)

U601 - SPONSOR TECH SESSION: Engineering a Better Engineering Education - Presented by Texas A&M Engineering

3:00 p.m.- 4:30 p.m.
101B, Convention Center

Speakers: Harry A. Hogan (Professor) (Texas A&M University), Tracy Anne Hammond (Professor)

Texas A&M University has a reputation for providing students with an innovative learning environment and engineering education. The Institute for Engineering Education & Innovation (IEEI) supports the advancement of scholarly work and the pedagogy of engineering education. This session will highlight the collaborations, initiatives, programs, and research that drive engineering education at all levels, creating a transformative and inclusive environment for students, educators, and researchers.

U86262 - NEE Technical Session - Assessment/Evaluation

3:00 p.m. - 4:30 p.m.
200H, Convention Center

Moderator: Katie Leanne Basinger (Dr.)

Speaker: Ashish D Borgaonkar (Assistant Professor)

Evaluation of Students Performance and Perception of Partial Flipping in Machine Learning Classes
Ahmed Dallal (Professor)

Establishing Metrics to Assess a Retraining Initiative
Joshua Trevett Dean
Gunnar O. Tamm (Professor) (United States Military Academy)
Jacob Daniel Reddington (United States Military Academy)
Frederick Todd Davidson (Assistant Professor)
Michael Osmon (Lieutenant Colonel)

Defining Key Terms in New ABET Student Outcomes
Nathan John Washuta (Assistant Professor)
Alyson Grace Eggleston
James Righter (The Citadel)
Robert J. Rabb (Chair, Mechanical Engineering)

The Benefits of a Course for 2nd and 3rd Year Students in Design Competition Teams
Craig Altmann

U8887 - PCEE Session 4: Resource / Curriculum Exchange

3:00 p.m. - 4:30 p.m.
Northstar A, Hyatt Regency

Moderator: Pamela S. Lotter-Perdue (Professor of Science & Engineering Education) (Towson University)

Bungee Action Figure Activity used to Gently Introduce Students to Excel and the MATLAB IDE (Resource Exchange)
Lynn A. Albers (Assistant Professor)

Engineering and Data Science for Environmental Justice (Resource Exchange)
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Designing engineering activities that use narratives to evoke empathy and support girls’ engagement: A guide for practitioners (Resource Exchange)
Jennifer Taylor
Amy Wilson-Lopez (Associate Professor)

How to Use the STEM-OP Levels to Support the Engineering Designed-Based Lesson Plan Template in The Framework for P-12 Engineering Learning (Resource Exchange)
Latanya Robinson
Emily Anna Dare (Dr.) (Florida International University)

The integration of entrepreneurship in a school-age engineering curriculum (Resource Exchange)
Karen Plaster (The University of Akron)
Lynne Pachnowski (Professor, Math Education)
Brad Maguth (Professor)

Biologically Inspired Design for Engineering Education-9th/10th Grade Engineering Unit (Curriculum Exchange)
Roxanne Moore
Julia Varnevoie (Research Associate II)
Michael Helms (Dr.)
Caroline Doughton Greiner
Abeerah P Rehmat (Research Scientist, II) (Georgia Institute of Technology)
Meltem Alemdar (Georgia Institute of Technology)
Jeffrey H Rosen (Program Director) (Georgia Institute of Technology)
Marc Weissburg

Engineering a Chain Reaction Machine: Inspiring Student Interest in Engineering and Engineering Technology (Resource Exchange)
Melissa Huppert
Jason Bruns (Director, Minnesota State Engineering Center of Excellence) (Minnesota State University, Mankato)

Storylining a middle school engineering module that addresses the NGSS science standards (Resource Exchange)
Jessica Ohanian Perez (Associate Director of Education and Inclusivity)
Joe Muskin (Education coordinator) (University of Illinois at Urbana - Champaign)

Turn the Lights On! Part II: An Online Professional Development Aid for Teaching an Engineering Design-Based Curriculum in 8th Grade (Resource Exchange)
Barbara Fagundes
Nrupaja Bhide (Purdue University at West Lafayette (PPI))
Tamara J Moore (Professor of Engineering Education) (Purdue University at West Lafayette (COE))
Maeve Drummond Oakes (Assistant Director for Education)
Allison Godwin (Associate Professor)

Turn the Lights On! Part I: An Engineering Design-Based Curriculum for Teaching 8th Grade Students Renewable Energy (Resource Exchange)
Ruben D. Lopez-Parra
Barbara Fagundes
Diallo Wallace (Mr.) (Purdue University at West Lafayette (COE))
Nrupaja Bhide (Purdue University at West Lafayette (PPI))
Joana Marques Melo (Doctor) (Purdue University at West Lafayette (COE))
Tamara J Moore (Professor of Engineering Education) (Purdue University at West Lafayette (COE))
Maeve Drummond Oakes (Assistant Director for Education)
Allison Godwin (Associate Professor)

Beat the heat: Coupling technology and engineering design for young elementary students (Resource Exchange)
Erica J Marti (Assistant Professor) (University of Nevada - Las Vegas)
Rebecca Kober

Parent Professional Development: Connecting Formal Education to Informal Education (Curriculum Exchange)
Hoda Ehsan (Director of Quadrivium Design and Engineering ) (The Hill School)

Introducing Optimization in Elementary Education: a Precursor to Multibody Dynamics (Resource Exchange)
Joselyn Elisabeth Busato
Elif Miskioglu (Assistant Professor)
Kaela M Martin
Davide Guzzetti

Engineering and Engineering Technology STEM Curriculum Courses (Resource Exchange)
Jason Bruns (Director, Minnesota State Engineering Center of Excellence) (Minnesota State University, Mankato)
Brian Grogan (Mainstream Business Operations Lead) (Siemens Digital Industries Software)

Feast or Famine Terrarium Project (Resource Exchange)
Vicki V. May (Professor) (Dartmouth College)
Samuel S. Streeter (Graduate Student) (Dartmouth College)
Sara Vannah (Dartmouth College)
A toolkit to support 8- to 11-year-olds in using the engineering design process across out-of-school settings (Resource Exchange)

Susan M Letourneau (Senior Research Associate)
Sonja Latimore
Lisa Ellsworth (Senior Editor/Producer)
Melissa Carlson
Louise Flannery
Peter Ciavarella
Trevor Taylor

U91502 - SUNDAY WORKSHOP: Robotics and Engineering Design Education Made Authentic, Affordable, and Inclusive

9:00 a.m. - 12:00 p.m.
101F, Convention Center

Speaker: Anurag Purwar (Associate Professor)

Robotics, automation, and artificial intelligence, and their intersection is transforming industry, workforce, and professions. Consequently, engineering education in postsecondary institutions now has a renewed focus on multidisciplinary project- and problem-based learning. This would not be possible unless students and educators have an early access to authentic, affordable, and inclusive educational tools, which facilitate learning and increase access. With the support of a Teaching Innovation grant, Stony Brook University (SUNY) led the creation of a Freshman Design Innovation class, which provides freshman engineering students a project-based, fun-filled context in which they learn about engineering design, mechanism design, practical electronics, and microcontroller programming. This workshop will 1) introduce attendees to the motivation of the class and its structure, 2) lead them through a series of hands-on robot and mechanical design exercises using the robot kit and app the presenter developed under an NSF-funded award to design and prototype simple mechanical contraptions to more complex machines and robots, and 3) demonstrate how to incorporate significant design activities in the classroom while teaching concepts from mechanical engineering, electronics, and computer programming.

U9193 - CIT Division Technical Session #2

3:00 p.m. - 4:30 p.m.
M101C, Convention Center

Moderator: James K. Nelson (Associate Vice Chancellor) (Texas A&M University)

Speakers: Cheryl Lynn Resch (Lecturer), Robin A.M. Hensel (Assistant Dean for Freshman Experience), Ahmad Javaid

The following papers will be presented during this session:

83: Institutional Review Panel for Cybersecurity Research and Education. (James K. Nelson)
88: Cross-Sectional Survey of CS Students Knowledge of and Attitudes Toward Cybersecurity. (Cheryl Lynn Resch)
107: Development of a Cybersecurity Professional Identity. (Robin A. Hensel)
113: Introducing Cybersecurity in a Discrete Structures Course Through a Visualization-based Plug-and-Play Cryptography Module. (Ahmad Y. Javaid)

Institutional Review Panel for Cybersecurity Research and Education

James K. Nelson (Associate Vice Chancellor) (Texas A&M University)
Brent L. Donham (Dean, College of Science & Engineering) (Texas A&M University - Commerce)

Cross-Sectional Survey of CS Students’ Knowledge of and Attitudes Toward Cybersecurity

Cheryl Lynn Resch (Lecturer)
Keyna Wintjen (University of Florida)

Development of a Cybersecurity Professional Identity

Robin A.M. Hensel (Assistant Dean for Freshman Experience)
Katerina Goseva-Popstojanova (Professor) (West Virginia University)

Introducing Cybersecurity in a Discrete Structures Course Through a Visualization-based Plug-and-Play Cryptography Module

Ahmad Javaid
Quamar Niyaz
Charlene M Czerniak
U92308 - ASEE 101, General Body Meeting, and Finances Town Hall

3:00 p.m. - 4:30 p.m.
Auditorium 1, Convention Center
Moderator: Adrienne Minerick

U92682 - Engineering Culture Roundtable

1:15 p.m. - 2:45 p.m.
Ballroom B, Convention Center

In the broad fields of engineering, do our attitudes and behavioral characteristics - our culture - best serve our core mission in engineering to solve problems for our world and for our society? In addition, do the practices and skills we develop in our students place greater importance on some information and lesser importance on others? Given the changing forces influencing our world and our society, should we revisit these practices and skills in valuing and utilizing information? Should we revisit the design and optimization processes we follow so that our engineered solutions provide sustainable solutions? Roundtables will be facilitated to explore Strengths, Opportunities, Aspirations, and Results (SOAR) of our engineering culture. Ray McDermott noted in 2006, “Culture is not a past cause to a current self. Culture is the current challenge to possible future selves.” Join these roundtable discussions to participate in defining our future selves.

U1534 - ERM: Design!

3:00 p.m. - 4:30 p.m.
101D, Convention Center
Moderators: Jennifer Brown (Graduate Instructor), Kirsten A. Davis (Assistant Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Interested in engineering design? Come hear what this group has to say!

Building Better Engineers: Critical Reflection as a High Impact Practice in Design Learning
Andres Sanchez (Harvey Mudd College)
Laura Palucki Blake

David Chen (Harvey Mudd College)
Magdalena Jones (Harvey Mudd College)
Serena Mao (Harvey Mudd College)
Leah Mendelson (Harvey Mudd College)
Steven Santana (Prof.)

The Role of Students’ Grit and Goal Orientation in Predicting their Academic Success in Authentic Learning Environments
Mohamed Jalal

Exploring How Students Attend to the Nature and Dynamics of Complexity in their Design Problems
Corey T. Schimpf (Assistant Professor)
Titiksha Singh (University at Buffalo, The State University of New York)

Empathy Development in Community-Engagement Course
Nusaybah Abu-mulaweh
William C. Oakes (Director and Professor)
Justin L. Hess (Assistant Professor)

The Impact of Students’ Grit & Project Ownership on Students’ Learning Outcomes in Maker-based Cornerstone Engineering Design Courses
Mohamed Jalal

Measuring and Promoting Empathic Formation in a Multidisciplinary Engineering Design Course
Justin L. Hess (Assistant Professor)
Elizabeth Sanders (Graduate Student)
Nicholas D. Fila (Research Assistant Professor) (Iowa State University of Science and Technology)

U15729 - ERM: Persistence and Attrition in Engineering

3:00 p.m. - 4:30 p.m.
Nicollet A, Hyatt Regency
Moderators: Justin Charles Major (Research Assistant), Rebecca Marie Reck (Teaching Associate Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This session focuses on persistence and attrition within engineering. Come check it out!

Engineering and Exclusionary ‘Weed-Out’ Culture: A Framework for Exploring Literature for Meaning and Influence
Cassie Wallwey (Research Associate)
Giselle Guanes (Graduate Student) (The Ohio State University)
Jeremy Grifski (Graduate Research Associate) (The Ohio State University)
Tyler Milburn

Probation and Suspension in Engineering by Major and Matriculation Model
Lisa Lampe
Baker Martin

Development of a Longitudinal Method to Measure Attrition Intentions
Kyeonghun Jwa
Catherine Berdanier

The Impact of Math and Science Remedial Education on Engineering Major Choice, Degree Attainment, and Time to Degree
Joyce B. Main (Associate Professor) (Purdue University at West Lafayette (COE))
Amanda Griffith (Associate Professor of Economics)

Understanding Engineering Doctoral Preparation and Socialization through McNair Scholars Program Alumni
Kanembe Shanachilubwa
Catherine Berdanier
Gabriella M. Sallai (Pennsylvania State University)

Brad G Davis (Major) (United States Military Academy)
Jes Barron (Assistant Professor)
Brock E. Barry (Director, Civil Engineering) (United States Military Academy)
Jakob C Bruhl (Civil Engineering Academy Professor) (United States Military Academy)

Theory to Practice: Application of Problem-based learning, Flipped-classroom, and Just-in-time-teaching in an Advanced Geotechnical Engineering Course
Jes Barron (Assistant Professor)
Brock E. Barry (Director, Civil Engineering) (United States Military Academy)
James Ledlie Klosky

Student Perceptions of Project-Based Learning as Applicable to the Formation of Trusted Professionals
Jennifer Retherford (Distinguished Lecturer)
Sarah Mobley (Lecturer)
Brad C McCoy (LTC)
Aaron T Hill (Colonel, US Army)

Does the Active Learning Help Students Learn and Improve the Performance? A Case Study of Engineering and Management
M. A. Karim (Professor)
Sanjeev Adhikari (Dr.) (Kennesaw State University)

Promoting Student Learning and Teaching in the Virtual Environment and In-Person
Monique H. Head (Associate Professor) (University of Delaware)
Christos Aloupis (University of Delaware)
James H. Hanson (Professor) (Rose-Hulman Institute of Technology)
Allen A. Jayne (Assistant Professor) (University of Delaware)

Enhancing the Undergraduate Civil Engineering Experience through 3D-Printing, Problem-Based Learning Opportunities
Philip Scott Harvey (Associate Professor) (University of Oklahoma)
Chase Landon Hibbard (University of Oklahoma)

U7183 - Civil Engineering Division - Changing How We Teach: Flipping, Project-Based Learning, and More!

3:00 p.m. - 4:30 p.m.
M100J, Convention Center

Moderators: Gerald J. Wang (Assistant Professor) (Carnegie Mellon University), Brock E. Barry (Director, Civil Engineering) (United States Military Academy)

This session on effective teaching gives examples and evidence on the effectiveness of non-lecture teaching techniques. Different examples of using flipping and project-based learning are offered to provide attendees with a variety of ideas for their own implementation.

Comparison of Four Flipped Classroom Implementations in a Civil Engineering Curriculum during the COVID-19 Pandemic
Kevin Mcmullen
David Carlson (Assistant Professor) (United States Military Academy)
U72366 - TOUR: Join us for a walking tour of the Minneapolis Sculpture Garden

3:00 p.m. - 4:30 p.m.
Minneapolis Sculpture Garden, 725 Vineland Place, Minneapolis, Minnesota

The Architectural Engineering Division invites you to join us for a walking tour of the Minneapolis Sculpture Garden. Meet us in the lobby of the Hyatt Regency or meet us at the Sculpture Garden, which is about a 15 minute walk from the hotel.

U280 - Growing as Engineering Education Scholars in the United States—Perspectives from Chinese International Graduate Students

3:00 p.m. - 4:30 p.m.
101E, Convention Center

Be advised: This is a combined session and will be presented in two parts, from 1:15 p.m. to 2:45 p.m. and from 3:00 p.m. to 4:30 p.m.

U27327 - Teaching Teamwork in a First-Year Engineering Program: Lessons Learned

3:00 p.m. - 4:30 p.m.
200E, Convention Center

Moderator: Sidd Kumar

Speakers: Homero Murzi (Assistant Professor), Jennifer M. Case (Chair, Engineering Education) (Virginia Polytechnic Institute and State University), Matthew James (Associate Professor of Practice), Yasir Gamieldien

This panel discussion is designed for engineering educators interested in: (a) understanding how faculty at different stages in their teaching/research career perceive and go about teaching teamwork, and (b) how to go about teaching teamwork better so that students end up adopting these peripheral skills. Faculty and graduate students from Virginia Tech will describe how they have gone about implementing and teaching teamwork in their engineering classrooms and what they consider the most effective strategies. After the panel session, a short interactive activity will also be conducted with audience members to illustrate more effective ways of teaching teamwork.

U93169 - Issues Facing STEM Programs at Rural Two-Year Colleges

3:00 p.m. - 4:30 p.m.
209, Convention Center

Moderator: Philip J. Regalbuto (Instructor)

A look at STEM programs at rural two-year colleges

Building Partnerships to Bridge the Transfer Gap and Increase Student Success

Lesley Strawderman (Associate Professor) (Mississippi State University)
Mahnas Jean Mohammadi-aragh (Associate Professor)
Umar Iqbal (Assistant Clinical Professor)
Jenna Johnson (Assistant Clinical Professor) (Mississippi State University)
Shane Brauer (Assistant Clinical Professor) (Mississippi State University)

Improving Engineering Transfer Student Onboarding and Retention through Scholarship and Programmatic Interventions

Cody Mann (Director of Bell Program Operations and Facilitators) (Minnesota State University, Mankato)
Andrew Hanegmon
Michelle Soledad (Assistant Professor)
Anthony Venditto (Bell Program Facilitator)
Katherine Faye Ulseth (Itasca Community College)
Frankie K. Wood-Black (Division Chair, Eng., Phys. Sci. and PTEC)
Liz Cox

Work-in-Progress: Addressing Recruitment Issues with Potential Transfer Students from State Technical Colleges

Shannon Conner
Luke A Duncan
Louise Averitt (Clemson University)
D. Matthew Boyer (Research Associate Professor) (Clemson University)
Marian S. Kennedy (Associate Professor)
Characterizing the Curricular Complexity Faced by Transfer Students: 2+2, Vertical Transfers, and Curricular Change

David Reeping (Assistant Professor)
Dustin Grote (Assistant Professor) (Weber State University)

U38199 - Incorporating Technology in the Classroom

3:00 p.m. - 4:30 p.m.
200D, Convention Center

Moderator: Brian E. Faulkner (Assistant Professor)

In addition to calculators and computers, attendees will learn about the use of simulations, virtual reality, and web-based applications in the classroom.

Bringing differential equations to life by two- and three-dimensional visualizations of numerically simulated dynamic systems
Guenter Bischof (Associate Professor)
Thomas Kainz
Eric Christian Menard
Robert Lion Poetsch
Christian J. Steinmann
Maximilian Sterkl
Christoph Tröster

Visualizing tensor component transformations using virtual reality and web-based applications
John W. Sanders (Assistant Professor)
Serop Kelkelian (California State University, Fullerton)
Markus Wieser
Guenter Bischof (Associate Professor)

Innovating and modernizing a Linear Algebra class through teaching computational skills
Mariana Silva (Teaching Associate Professor)
Philipp Hieronymi
Matthew West (Prof.) (University of Illinois at Urbana - Champaign)
Nicolas Nytko (University of Illinois at Urbana - Champaign)
Akshit Deshpande (University of Illinois at Urbana - Champaign)
Jer-Chin Chuang (University of Illinois at Urbana - Champaign)
Sascha Hilgenfeldt (University of Illinois at Urbana - Champaign)

 Preferences for Solving a Graphing Question
Emre Tokgoz (Associate Professor) (Quinnipiac University)
Samantha Eddi Scarpinella (Student) (Quinnipiac University)

WIP: On Teaching and Learning the Concept of an Inverse Function: A Visual and Intuitive Approach
Daniel Raviv (Professor)

U39200 - Mechanical Engineering: Thermodynamics

3:00 p.m. - 4:30 p.m.
205A, Convention Center

Speaker: Maria-isabel Carnasciali (Associate Professor)

Using Topology Optimization in an Undergraduate Classroom Setting
Subodh Chandra Subedi
Krishnan Suresh (University of Wisconsin - Madison)

Teaching, Learning, and Understanding of Thermodynamics in a Mechanical Engineering Curriculum
Emmanuel K. Glakpe (Professor) (Howard University)

A Rankine Cycle Design Project for Assessment of ABET Student Outcome #1
Andrew Lutz (Associate Professor)

Rigorous Development of the Fixed Dead State Version of the Exergy Equation Suitable for Undergraduate Class Presentation and Coursework
Sheldon M. Jeter (Associate Professor) (Georgia Institute of Technology)

Evaluating the benefits of adding interactive elements to traditional print mechanical engineering textbooks
Ryan Barlow (Lead Content Author - Mechanical Engineering)
Oscar Rios (Engineering Content Developer) (zyBooks, A Wiley Brand)
James Eakins (zyBooks, A Wiley Brand)
Adrian Rodriguez (Lecturer)

U3029 - Computers in Education 1 - Programming I

3:00 p.m. - 4:30 p.m.
213, Convention Center

Moderator: Randy Mcdonald (Director of Learning Design and Distance Education)
This session will focus on papers related to teaching students how to program computers in the realm of programming courses.

**Student Perceptions of Programming Instruction in a Makerspace vs Synchronous Remote Environment**
James E. Lewis (Associate Professor)
Nicholas Hawkins (Assistant Professor) (University of Louisville)

**Integrating Artificial Intelligence into Cybersecurity Curriculum: New Perspectives**
AHMET ARIS (Florida International University)
Luis Carlos Puche Rondon (Florida International University)
Daniel Ortiz (Florida International University)
Monique S. Ross (Assistant Professor) (Florida International University)
Mark Finlayson (Associate Professor) (Florida International University)

**Improving Student Learning Experience with MATLAB Grader and Live Scripts**
Liya Ni (Professor)
Keith Hekman

**Work-in-Progress: Bridging the Gap Between MATLAB and Python via ROS to Build Skills in an Introductory Programming Course**
Joshua Fagan (PhD Candidate) (University of Tennessee at Knoxville)
Amy Katherine Biegalski (Lecturer)

**Detecting Possible Cheating in Programming Courses Using Drastic Code Change**
Nabeel Alzahrani (University of California, Riverside)
Frank Vahid (Professor) (University of California, Riverside)

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**U31226 - Industrial Engineering Division Technical Session 2**
3:00 p.m. - 4:30 p.m.
200B, Convention Center

**Moderator: Genaro Zavala (Professor)**

**Factors Influencing the Choice of the Industrial Engineering Undergraduate Program**
Danilo Leal (Professor)
Genaro Zavala (Professor)

**Evaluating the Problem-Solving Studio Approach for Teaching Facilities Layout Planning & Design**

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**U34152 - International Division Technical Session 4 - Global South Engineering**
3:00 p.m. - 4:30 p.m.
103C, Convention Center

**Moderator: Phillip Albert Sanger (Professor)**

International Division Subtheme: Global South Engineering

**Identifying Best Practices to Sustain a US-Mexico International Program Integrated into an Engineering Curriculum**
Rodrigo Martinez-duarte
Sallie Turnbull (Clemson University)
Tim Guggisberg (Clinical Assistant Professor) (Clemson University)
Juan Dobarganes

**Applying a Collaborative Online International Learning Experience (COIL) During Two Undergraduate Environmental Engineering Courses in the US and Mexico**
Jorge E Loyo Rosales (Associate Director of Education, NEWT) (Rice University)
Maria Elena Raynal Gutiérrez (Tecnologico de Monterrey (ITESM))

**Connecting Classrooms Across Borders to Engineer**
process to manufacture a Tequila bottle
Rodrigo Martinez-duarte
Magda Guerra-Ayala
Jaime Ivan Molina-Verdugo (ITESO University)

Three-Year Review of a Short-Term Faculty-Embedded Aerospace Engineering Study Abroad Program in Brazil
Ali Gordon
Sandra Sousa (University of Central Florida)

Engineering Twinning Program: Universidad de Monterrey (UDEM), MEXICO and Nagaoka University of Technology (NUT), JAPAN
Demofilo Maldonado

U37198 - Materials Division Technical Session 2
3:00 p.m. - 4:30 p.m.
103A, Convention Center

Moderators: Jonathan R. Brown (Assistant Professor of Practice), Alison K Polasik (Associate Professor of Engineering) (Campbell University)

Speakers: Kaitlin Tyler (Academic Development Specialist), Susan P. Gentry (Assistant Professor of Teaching), Benjamin Thomas Afflerbach

Students’ changing perceptions of programming skills in Materials Science and Engineering
Susan P. Gentry (Assistant Professor of Teaching)

Authentic Undergraduate Research in Machine Learning with The Informatics Skunkworks: A Strategy for Scalable Apprenticeship Applied to Materials Informatics Research
Benjamin Thomas Afflerbach
Nafsaniath Fathema (Researcher and Evaluator)
Anne Lynn Gillian-Daniel (University of Wisconsin - Madison)
Wendy C. Crone (Professor) (University of Wisconsin - Madison)
Dane Morgan (Assistant Professor) (University of Wisconsin - Madison)

Teaching Engineering Design with Materials Selection and Simulation through Case Studies: A Work in Progress
Kaitlin Tyler (Academic Development Specialist)
Nicola Stefani (Education Development Manager)
Lakshana Mohee (Education Development Manager) (ANSYS - Granta Education Division)

WIP: Problems and Promises of Online Lectures for the Mechanics of Materials related Courses during and after COVID-19
Jayanta K. Banerjee (Professor)

U4216 - Multidisciplinary Engineering Division Technical Session - Empathy, Metacognitive Skills, and Perceptions of Success
3:00 p.m. - 4:30 p.m.
210, Convention Center

Moderators: Anna Engelke, Olgha Bassam Qaqish (Associate Director of the Engineering Grand Challenges Scholars Program)

Work-in-Progress: Assessing Student Engagement and Perceptions of Success with Respect to Team Role Selection and Execution in a Multidisciplinary Capstone Course
Edward Latorre-Navarro
Elizabeth Louise Meier

Assessing Students’ Metacognitive Skills in a Summer Undergraduate Research Program
Simon Thomas Ghanat (Associate Professor)
Dena Garner
Todd Wittman (The Citadel)
M. Kristen Hefner (The Citadel)
Deirdre D Ragan (The Citadel)
Thad Le-Vasicek (The Citadel)
Emily Kate Bierman (Assistant Professor) (The Citadel)
Blakely Adair-Hudson (The Citadel)
Ege Arslaner

What Story Do You Want to Tell? Developing Empathy in Engineering Students through an Extra-Curricular Narrative Sharing Experience
Stephanie Lunn
Cristi L. Bell-Huff (Research Manager) (Georgia Institute of Technology)

The Brain Trainer
Bala Maheswaran (Professor)
Kendrick Langenbach (Northeastern University)
2022 ASEE ANNUAL CONFERENCE
SUNDAY, JUNE 26th SESSIONS

U675668 - ASEE DIVISION MIXER
4:30 p.m.- 6:00 p.m.
Ballroom A, Convention Center
Mix and mingle with your friends and colleagues at one of ASEE’s most popular events in which the different divisions showcase what they do.

U775614 - ASEE TASTE OF MINNEAPOLIS
6:00 p.m. - 8:30 p.m.
Convention Center Plaza, Convention Center
Join your friends and colleagues as we celebrate the tastes and sounds of Minneapolis!

U433 - Dinner for IFEES, GEDC
7:00 p.m. - 9:30 p.m.
Alma Restaurant; 528 University Ave SE, Minneapolis
Reception and dinner for IFEES, GEDC, and friends

U75509 - PNW Section Mixer
7:00 p.m. - 10:00 p.m.
Finnegan’s Brew Company; 817 South 5th Ave.
Minneapolis
Please join your colleagues for the Annual Pacific Northwest Section Mixer. This ever-popular event includes food, drinks, and fun with your Pacific Northwest colleagues. Many people have commented that this is one of the best events at the conference.

U75637 - ASEE President Adrienne Minerick; Friends and Family Reception (By Invite Only)
8:00 p.m. - 9:30 p.m.
Northwoods, Hyatt Regency
ASEE President Friends and Family Reception (By Invite Only)

U22690 - Engineering Libraries Division Social
8:00 p.m. - 10:00 p.m.
Information available on the ELD website.

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
M175580 - Registration
7:00 am - 5:00 pm
Exhibit Hall B & C, Convention Center

M175625 - Yoga
7:00 am - 7:45 am
Exhibit Hall B & C Foyer, Convention Center
Join your friends and colleagues as we jump-start our day with a renewing stretch and meditation class!

M275566 - MONDAY PLENARY
8:00 am - 9:30 am
Ballroom A, Convention Center
Moderator: Adrienne Minerick
Speaker: Jodi Benson (Chief Innovation, Technology, and Quality Officer, General Mills)
Join your friends and colleagues at this special session featuring keynote speaker Jodi Benson, chief innovation, technology, and quality officer at General Mills.

M41420 - MIND Business Meeting
9:45 am - 11:15 am
M101AB, Convention Center
MIND Business Meeting

M42332 - Multidisciplinary Engineering Division Panel Session on Integrated Engineering
11:30 am - 1:00 pm
Minnehaha, Hyatt Regency
Moderator: Jenna P. Carpenter (Dean of Engineering) (Campbell University)
Speakers: Rebecca A Bates (Professor & Chair), Susan M Lord (Professor & Chair), Emanuela Tilley (Professor & Director)
This special interactive session aims to engage the audience in a conversation about integrated engineering, a transdisciplinary approach to engineering. Participants will learn about the integrated engineering programs at Minnesota State University, Mankato (USA), the University of San Diego (USA), University College London (UK), and Campbell University (USA). Participants will discuss the concept of integrated engineering and how it might apply to their programs and students. We hope this will establish a foundation for the community to continue discussion of integrated engineering as an emerging description of engineering learning and practice. The goals of this session are to: Engage a new audience of engineering educators in a conversation about integrated engineering, a transdisciplinary approach to engineering.

M556 - Engineering Ethics Division: Perspectives on Engineering Ethics Education
9:45 am - 11:15 am
201, Convention Center
Moderators: Alison J Kerr (Postdoctoral Researcher) (Purdue University at West Lafayette (PPI)), Andrew O. Brightman (Assistant Head for Academic Affairs and Associate Professor of Engineering Practice) (Purdue University at West Lafayette (COE)), Olgha Bassam Qaqish (Associate Director of the Engineering Grand Challenges Scholars Program)
Disciplinary Leaders Perceptions of Ethics: An Interview-Based Study of Ethics Frameworks
Laurie A Pinkert (University of Central Florida)
Jonathan Beever (Associate Professor)
Compliance or Catalyst: Faculty Perspectives on the Role of Accreditation in Engineering Ethics Education [Full Research Paper]
Madeline Polmear (Dr.)
Angela R Bielefeldt (Professor)
Exploring Perceptions of Ethics and Social Responsibility Among Engineering Students and Professionals: Research Highlights and Implications for the Field
Brent K Jestick (Associate Professor) (Purdue University at West Lafayette (COE))
Stephanie Claussen (Assistant Professor)
Dayoung Kim (Ph.D. Candidate) (Purdue University at West Lafayette (COE))
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Lazlo Stepback (Purdue University at West Lafayette (PPI))

How are Issues of Diversity, Equity, Inclusion, and Justice Reflected in Engineering Societies’ Written Communications? A Review

Amir Hedayati Mehdiabadi (Assistant Professor) (Colorado State University)
Rebecca A Atadero (Associate Professor) (Colorado State University)

M56201 - Statics Fanatics 1

9:45 am - 11:15 am
200G, Convention Center

Moderators: Carmen Maria Muller-Karger (PhD), Jacob Preston Moore (Associate Professor of Engineering) (Pennsylvania State University, Mont Alto)

In this session you will find papers focused on improving student learning in Statics. If you think nothing changes in Statics, then you need to attend this session to learn about some of the exciting things happening in the teaching of this course.

Evaluating the Effectiveness of a Statics Recitation Course

Brian Lani
Charlotte De Vries (Assistant Professor of Mechanical Engineering) (Pennsylvania State University, Behrend College)

The Effect of Introducing Biological and Environmental Discipline-Themed Problems in Statics on Students’ Self-Efficacy and Perceived-Value of the Course

Yemisi Oyewola
Brian Douglas Cowburn (Rochester Institute of Technology (COE))
Theresa Green
Wade H Goodridge
Kurt Henry Becker (Engineering Education Professor) (Utah State University - Engineering Education)

Revisualizing Statics

Will Cashel-cordo
Anuja Kamat (Dr.) (Wentworth Institute of Technology)

Improvement in Student Learning Objectives from Group Discussions Between Exam Sittings

Adam C Powell (Associate Professor) (WorcesterPolytechnic Institute)
Kimberly Lechasseur (Research & Evaluation Associate) (Worcester Polytechnic Institute)
Sarah Wodin-schwartz (Assistant Teaching Professor) (Worcester Polytechnic Institute)

Work in Progress: Context Matters: A Comparative Study of Results of Common Concept Questions in Statics at Several Diverse Institutions

Christopher Papadopoulos (Professor) (University of Puerto Rico, Mayaguez Campus)
Eric Davishahl (Professor and Program Coordinator) (Whatcom Community College)
Carisa R Ramming (Assistant Dean)
Jean Carlos Batista Abreu (Assistant Professor) (Elizabethtown College)
William A Kitch (Dr.) (Angelo State University)

M627 - Utilizing Technology to Train Chemical Engineering Students

9:45 am - 11:15 am
103B, Convention Center

Global Projects: An Initiative to Train Chemical Engineering Students in Global Awareness

Joaquin Rodriguez (Faculty) (University of Pittsburgh)
David V.P. Sanchez (Assistant Professor)

Flipping classrooms, sowing seeds and developing confidence: teaching engineering judgement to undergraduate engineering students

Deesha Chadha
Klaus Hellgardt

Videos for Project Dissemination: Adopting Student-Written YouTube Problems in any Course

Matthew W Liberatore (Professor of Chemical Engineering, Interactive textbook author)
Uchenna Asogwa (The University of Toledo)

Exploring Engineering Students’ Decision Making Priorities in a Digital Plant Environment

Jeffrey Stransky
Cheryl A Bodnar (Associate Professor, Experiential Engineering Education)
Daniel D. Burkey (Associate Dean for Undergraduate Education & Diversity) (University of Connecticut)
Daniel D. Anastasios (Associate Professor of Chemical Engineering) (Rose-Hulman Institute of Technology)
Matthew Cooper (Associate Professor (Teaching))

Unique and Randomized Quiz Generation for Enhanced Learning

Mark A. Burns (Chair)
Valerie N Johnson
Kaylee Smith (University of Michigan)

**Hands-on Project Based Learning Design Project to Accommodate Social Distancing and On-line Learners**
Taryn Melkus Bayles (Professor)

**M73295 - Positionality 101: Reflecting on Positionality in your Research and Practice to Equity and Impact**

9:45 am - 11:15 am
Lakeshore B, Hyatt Regency

Moderator: Meagan Pollock

Speakers: Stephen Secules (Assistant Professor), Cassandra J McCall (Dr.), Joel Alejandro Mejia (Dr.), Matilde Luz Sanchez-pena (Assistant Professor), Martina V. Svyantek (Doctoral Candidate) (Virginia Polytechnic Institute and State University)

This workshop promotes reflection on positionality to help increase participants’ nuanced understandings of their impact on research and practice regarding equity. Positionality addresses our demographic identities (e.g., race, gender, sexual orientation, mental health) and includes both our personal sense of identity and how we are identified by others. The workshop will use paired narrative explorations to help participants unpack different dimensions of their positionality and impact.

**M7126 - Civil Engineering Division - Innovative Changes to the Typical Civil Engineering Coursework.**

9:45 am - 11:15 am
M100J, Convention Center

Moderators: Matthew D. Lovell (Associate Professor) (Rose-Hulman Institute of Technology), James Kaklamanos (Associate Professor of Civil Engineering)

From project-based, first-year courses to vertically integrated learning, civil engineering programs are finding ways to engage students earlier and to develop a broader scope of skills and mindsets in students. The papers in this session describe various efforts to cultivate mindsets (lifelong learners or an entrepreneurial mindset), engage students through first-year courses or by deliberately fostering creativity, or by incorporating sustainable design using the Engineering for One Planet framework.

**Including Principles of Sustainability in Design by Implementing the Engineering for One Planet Framework**

Andrea L Welker (Associate Dean for Academic Affairs and Professor)
Virginia Smith (Assistant Professor) (Villanova University)
Shweta Shrestha (Villanova University)
Kristin M. Sample-lord (Assistant Professor) (Villanova University)

**Fostering the Deliberate Development of Creative Engineers**

Jakob C Bruhl (Civil Engineering Academy Professor) (United States Military Academy)
James Ledlie Klosky
Andrea Surovek

**Development of a Project-Based Civil & Environmental Introductory Course**

Jacob Henschen (Teaching Assistant Professor)
Jordan Ouellet (Graduate Research Assistant) (University of Illinois at Urbana - Champaign)

**Early Engagement and Vertically-Integrated Learning: Developing Whole-Person and Entrepreneurially-Minded Engineers**

Ellen Zerbe
Adjo A Amekudzi-Kennedy (Professor) (Georgia Institute of Technology)
Kevin Haas (Associate Professor) (Georgia Institute of Technology)
Emily Grubert (Georgia Institute of Technology)
Susan E Burns (Dr.) (Georgia Institute of Technology)
Iris Tien (Georgia Institute of Technology)
Kari Watkins (Georgia Institute of Technology)
John H Koon (Professor of Practice) (Georgia Institute of Technology)
Robert Benjamin Simon (Academic Professional)
John E. Taylor (Professor) (Georgia Institute of Technology)
Donald Webster (Professor)
Lisa Gail Rosenstein (Principal Academic Professional) (Georgia Institute of Technology)

**Building Learning Frameworks**

Deborah Besser (CE Chair and Engineering Education Director) (University of St. Thomas)
Anna Roiger
Nick E Pawlak
Emma Sullivan

M8321 - How to Enhance Diversity, Inclusion, and Access in "Engineering for Community Development" (ECD) Programs

9:45 am - 11:15 am
101C, Convention Center

Speakers: Juan C. Lucena (Professor), David A. Delaine (Assistant Professor), Marie Stettler Kleine

Most ECD programs in the US attract unique students who want something different than traditional applications of engineering, i.e., they want to use engineering to help solve problems of underserved communities like homelessness and food, energy, and housing scarcity, just to name a few. While this desire to help is laudable and has manifested in many engineering schools via organizations like EWB and international service-learning, most of these students continue to be overwhelmingly white, middle-class, and physically-abled.

M28147 - First-Year Programs Division Technical Session 9: Decision Making, Problem-Based Projects, Role-Play, and a Nontraditional Project Theme

9:45 am - 11:15 am
200I, Convention Center

Moderators: Cory Brozina (Assistant Professor and Director of First Year Engineering), Brooke Morin (Senior Lecturer)

Origins of Requirement Development Skills in Engineering Undergraduates: Students’ Initial Thinking and Use in Engineering Decisions

Andrew Olewnik (Assistant Professor)
Vanessa Svihla
William Wild (Director, Student Success Programs) (University at Buffalo, The State University of New York)

Interdisciplinary Problem-Based Projects for First-Year Engineering Students

Henrik Worm Routhe (Aalborg University)
Maiken Winther (Aalborg University)
Jette Egelund Holgaard (Aalborg University)
Anette Kolmos (Professor) (Aalborg University)

The Impact of Role-Play Gamification on a Freshman-Level Engineering Project Course

Deana Delp
Jake Okun (Arizona State University, Polytechnic campus)

Instructing First-Year Engineering Students on the Ethics of Algorithms through a Role-Play

Ashish Hingle
Aditya Johri (Professor)
Cory Brozina (Assistant Professor and Director of First Year Engineering)

Student Engagement with a Nontraditional First-Year Engineering Project Theme

Benjamin Goldschneider (Graduate Student)
Benjamin Daniel Chambers (Associate Professor of Practice) (Virginia Polytechnic Institute and State University)

M75670 - EDC Data Committee Meeting - To Be Held Virtually

9:45 am - 11:15 am

M88108 - PCEE Technical Session 6: Engineering Design in High School

9:45 am - 11:15 am
200C, Convention Center

Moderator: Anne Marie Spence (Clinical Professor) (Baylor University)

Speakers: Rachel Figard, Karen Plaster (The University of Akron), Stacy S Klein-Gardner (Adjunct Professor), Sherri Youssef

The papers presented in this session include:
1. Understanding High School Student Experiences in an Engineering Course Designed For All (Fundamental, Diversity)
2. Entrepreneurial Mindset Integration in a Pre-Service Engineering Education Course (Fundamental)
The Engineering Design Process Portfolio Scoring Rubric (EDPPSR) – Initial Validity and Reliability (Fundamental)

The Continued Development and Validity Testing of an Engineering Design Value-Expectancy Scale (EDVES) for High School Students (Fundamental)

Understanding High School Student Experiences in an Engineering Course Designed For All (Fundamental, Diversity)

Rachel Figard
Medha Dalal
Jacob Roarty
Samantha Linda Nieto (Arizona State University, Polytechnic Campus)
Adam R Carberry (Associate Professor)

Entrepreneurial Mindset integration in Pre-Service Engineering Education Course (Fundamental)

Karen Plaster (The University of Akron)
Nidaa Makki

The Engineering Design Process Portfolio Scoring Rubric (EDPPSR) – Initial Validity and Reliability (Fundamental)

Stacy S Klein-Gardner (Adjunct Professor)
Gail Lynn Goldberg (Educational Consultant)
Leigh R Abts (Principle Research Scientist) (The Johns Hopkins University)

The Continued Development and Validity Testing of an Engineering Design Value-Expectancy Scale (EDVES) for High School Students (Fundamental)

Sherri Youssef
J. Blake Hylton (Assistant Professor of Mechanical Engineering) (Ohio Northern University)
Todd France (Chairperson) (Ohio Northern University)
Patrick James Herak (Senior Lecturer) (The Ohio State University)
Bruce Wellman (Facilitator) (Olathe Northwest High School)

Promoting STEM Interest in Middle School Girls through Strategic Engagement with College Student Mentors

Kathleen M Smits (Associate Professor of Civil Engineering) (The University of Texas at Arlington)
Michelle Schwartz
Nathaniel Leander Steadman (The University of Texas at Arlington)

K-12 STEM Outreach: A model to reinforce undergraduate fundamentals and inspire future generations

Cameryn Smith
Brad C McCoy (LTC)
Aaron T Hill (Colonel, US Army)
Adam Tawakkol

Investigating the role of compassion in engineering service learning

Paula Davis Lampley (Women in Engineering Director) (University of Cincinnati)
Krizia L. Cabrera-toro
Whitney Gaskins (Assistant Dean of Inclusive Excellence and Community Engagement) (University of Cincinnati)
Michele Mensah
Samieh Askarian (University of Cincinnati)

The road to Higher Education - Is the Pipeline Half Empty or Half Full? A model to reinforce undergraduate fundamentals and inspire future generations

Cameryn Smith
Brad C McCoy (LTC)
Aaron T Hill (Colonel, US Army)
Adam Tawakkol

Investigating the role of compassion in engineering service learning

Paula Davis Lampley (Women in Engineering Director) (University of Cincinnati)
Krizia L. Cabrera-toro
Whitney Gaskins (Assistant Dean of Inclusive Excellence and Community Engagement) (University of Cincinnati)
Michele Mensah
Samieh Askarian (University of Cincinnati)

M859 - Community Engagement Division Technical Session 1 - STEM Outreach

9:45 am - 11:15 am

200A, Convention Center

Moderator: Lamyaa El-gabry

Speakers: Paula Davis Lampley (Women in Engineering Director) (University of Cincinnati), Matthew Aruch (Assistant Director) (University of Maryland College Park), Cameryn Smith, Nathaniel Leander Steadman (The University of Texas at Arlington)
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

M85452 - ETD - A Technology Potpourri III
9:45 am - 11:15 am
205B, Convention Center

Nathan Howell
Vimu Unnikrishnan (Assistant Professor) (West Texas A&M University)
Kenneth Leitch

2022 ASEE ANNUAL CONFERENCE     ALL SESSIONS ARE CENTRAL DAYLIGHT TIME
MONDAY, JUNE 27th SESSIONS

M248 - Cooperative and Experiential Education Division Technical Session 1
9:45 am - 11:15 am
102F, Convention Center

Blending the Entrepreneurial Mindset into a Learning Module with a HVAC Design Project: Pilot Implementation
Carmen Cioc (Associate Professor)
Noela A. Haughton (Dr.) (The University of Toledo)
Sorin Cioc

Incorporating a Milestone-Based Project Based Learning Method in a Foundry Course
Luis Trueba
Anthony Torres (Associate Professor) (Texas State University)

Reading Between the Data Points: Analysis of the VSFS Internship Recruitment Process and Its Implications for Engineering Student Applicants
Jeongjin Park (Purdue University at West Lafayette (COE))
Lisa Bosman (Faculty)
Bhavana Kotla (PhD Candidate)

Understanding the Influence of Work-Integrated Learning Experiences on Students’ Identity Formation in Engineering
Andrea Lidia Castillo (University of California, Irvine)
Brianna Benedict McIntyre (Graduate Research Assistant)
Allison Godwin (Associate Professor)

Acquiring Testing of Materials Experience Through 3D Printing (WIP)
Ahmad Fayed (Assistant Professor)

Using a Toaster Oven for a Transient Heat Transfer Lab
Fredrick A. Nitterright (Assistant Teaching Professor) (Pennsylvania State University, Behrend College)
Leeann Marie Reynolds

M25325 - Concept Maps for Assessing Entrepreneurial Mindset
9:45 am - 11:15 am
200D, Convention Center
This panel session will provide individuals with an opportunity to learn about how concept maps can be used as an assessment tool for measuring entrepreneurial mindset (EM). Panelists are faculty from five institutions who represent a variety of engineering disciplines and diverse institutional contexts. The session will begin with a moderated Q&A about panelists’ experiences with assessing EM, in general, and with implementing concept maps.

M26254 - Environmental Engineering Division Technical Session 2

9:45 am - 11:15 am
102A, Convention Center

Moderator: Michelle Marincel Payne (Associate Professor) (Rose-Hulman Institute of Technology)

Speakers: Kathryn Blair Newhart (Assistant Professor) (United States Military Academy), Jean M. Andino (Faculty of Chemical Engineering and Civil, Environmental, and Sustainable Engineering) (Arizona State University), Cristian Robbins (Assistant Professor) (United States Military Academy), Craig R Woolard (Professor and Head) (Montana State University - Bozeman)


The Green Escape Room: Part 2 - Teaching Students Professional Engineering Ethics by Applying Environmental Engineering Principles and Deciphering Clues and Puzzles

Kathryn Blair Newhart (Assistant Professor) (United States Military Academy)
Andrew Ross Pfluger (Associate Professor) (United States Military Academy)
Michael A. Butkus (Professor of Environmental Engineering) (United States Military Academy)

Particle Sampling and Analyses Using Computer-Based Approaches

Jean M. Andino (Faculty of Chemical Engineering and Civil, Environmental, and Sustainable Engineering) (Arizona State University)
Adnan Abdullahi
Emily Erin Henderson
Fethiye Ozis (Assistant Teaching Professor)

Developing an Integrated Environmental Engineering Curriculum

Craig R Woolard (Professor and Head) (Montana State University - Bozeman)
Catherine M Kirkland (Montana State University - Bozeman)
Kathryn Plymesser (Assistant Professor)
William J. Schell (Associate Professor)
Susan Gallagher (Program Manager) (Montana State University - Bozeman)
Michelle Miley (Writing Center Director, Assistant Professor of English)
Kristen Intemann (Professor) (Montana State University - Bozeman)
Ellen Lauchnor (Associate Professor) (Montana State University - Bozeman)

A Framework to Assess an Undergraduate Environmental Engineering Curriculum in Addressing the Grand Challenges for Environmental Engineering in the 21st Century

Cristian Robbins (Assistant Professor) (United States Military Academy)
Michael A. Butkus (Professor of Environmental Engineering) (United States Military Academy)
Andrew Ross Pfluger (Associate Professor) (United States Military Academy)

M27303 - Faculty Development for Holistic Mentoring of Graduate Students through an Entrepreneurial Lens
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

9:45 am - 11:15 am

Skyway AB, Hyatt Regency

Speakers: Homero Murzi (Assistant Professor), Karen A High (Professor) (Clemson University), Jennifer Brown (Graduate Instructor), Stephanie Cutler (Assessment and Instructional Support Specialist), Sarah E Zappe (Assistant Dean for Teaching and Learning; Director of the Leonhard Center)

M27307 - Developing and Supporting Faculty Change Agents Through a Community of Practice

9:45 am - 11:15 am

Minnehaha, Hyatt Regency

Speakers: Homero Murzi (Assistant Professor), Cara Margherio (Assistant Director) (University of Washington), Adjo A Amekudzi-Kennedy (Professor) (Georgia Institute of Technology), Chris S Ferekides (Professor) (University of South Florida), Vanessa Sviha, Nadia N. Kellam (Associate Professor), Venkat N Gudivada (Professor and Chair), Jennifer A Turns (Professor), Yen-Lin Han (Associate Professor), Tiago Forin, Jennifer Harper Ogle (Professor), Mani Mina (Iowa State University of Science and Technology), Julia M. Williams (Professor of English)

M28256 - First-Year Programs Division Technical Session 8: Academic Progress, Retention, and Mathematics

9:45 am - 11:15 am

101F, Convention Center

Moderators: Joshua L. Hertz (Associate Teaching Professor), William John Palm (Associate Professor) (Roger Williams University)

How First-Year Engineering Students Perceive Their Academic Progress

- Michael Elmore (Director) (State University of New York at Binghamton)
- Melissa M Simonik
- Meghan Crist (Academic Advisor) (State University of New York at Binghamton)
- Koenraad E Gieskes (Interim Director)

Engineering retention, first-year mathematics performance, and financial aid requirements: A scoping review

- Jody Zhong (Graduate Assistant) (University of Louisville)
- Patricia A Ralston (Professor) (University of Louisville)
- Campbell R Bego (Assistant Professor)
- Thomas Tretter

Math Assessment as an Indicator of Program Retention

- Carrie A Francis (Assistant Professor)
- Michael A. W. Jacobson (University of Northwestern)

Exploring the relationship between initial mathematics course in college and engineering graduation rates

- Aysa Galbraith (Teaching Associate Professor)
- Heath Aren Schluterman (Associate Director of Academics) (University of Arkansas)
- Leslie Bartsch Massey (Instructor) (University of Arkansas)
- Brandon Crisel

The Roles of Friendship Among First-Year Engineering Students and Upper-Level Project Manager Students on Student Retention

- Na’imah White (University of Massachusetts Lowell)
- Douglas Correa Ospina (University of Massachusetts Lowell)
- Yanfen Li (Assistant Teaching Professor)
- Karoline Evans (University of Massachusetts Lowell)

M72120 - Architectural Engineering Division Technical Session 3

9:45 am - 11:15 am

102C, Convention Center

Speaker: Rachel Mosier (Associate Professor)

Promoting collaborative learning in architectural engineering design through multi-user augmented reality

- Yichen Li
- Soroush Farzin
- Shichao Liu (Worcester Polytechnic Institute)

Capstone Redesign: Engaging stakeholders to find the balance between individual and team learning outcomes

- Ryan Solnosky (Associate Teaching Professor)
- Ziyi Wang (Pennsylvania State University)

Impact of a VR/AR Module on First-Year Students’ Understanding of Architectural Engineering: A Comparison Across Demographics
Morgan McArthur (University of Nebraska - Lincoln)
Heidi A. Diefes-Dux (Professor)
Erica Ryherd (University of Nebraska - Lincoln)

Benchmarking Architectural Engineering Capstones Part 2: A deeper dive into Trends and Opportunities
Ryan Solnosky (Associate Teaching Professor)
John J Phillips (Architectural Engineering Professor) (Oklahoma State University)

M3066 - Computers in Education 3 - Modulus 1

9:45 am - 11:15 am
213, Convention Center

Moderator: Steven F Barrett (Vice Provost Undergraduate Education)

In computing, the modulus operator stands for remainder. This session will highlight some of the papers that simply did not fit into the themes of the other technical sessions.

Using Blackboard Quiz Pools and Other Automated Grading in Mechanical Engineering Courses
Keith Hekman
Ziliang Zhou (California Baptist University)

Impact of a Step Based Tutoring System on Student Learning at The University of Texas at El Paso
Ana Chavez
Hector Erives (Associate Professor of Practice) (University of Texas at El Paso)
Miguel Velez-reyes
Brian J Skromme (Professor) (Arizona State University)

ANON: A Task Scheduler in Source Code for Teaching and Implementing Concurrent or Real-Time Software
Frank Vahid (Professor) (University of California, Riverside)
Tony Givargis (Professor, Assoc. Dean for Student Affairs) (University of California, Irvine)

When is Automated Feedback a Barrier to Timely Feedback?
Andrew Deorio (Lecturer)
Christina Keefer (University of Michigan)

TreeVisual: Design and Evaluation of a Web-Based Visualization Tool for Teaching and Learning Tree Visualization
Brendan O’Handley (University of Notre Dame)
Yuheng Wu

Chaoli Wang (Professor) (University of Notre Dame)

M3071 - Computers in Education 5 - Modulus 4

9:45 am - 11:15 am
207, Convention Center

Moderator: Lina Battestilli (Teaching Associate Professor)

In computing, the modulus operator stands for remainder. This session will highlight some of the papers that simply did not fit into the themes of the other technical sessions.

Work in Progress: A Literature Review On Computational & Numerical Methods in Engineering Education
Nicolas Leger (Graduate Research Assistant) (Florida International University)
Bruk T Berhane (Assistant Professor of Engineering Education) (Florida International University)

A tool to analyze and synthesize planar mechanisms
Alexander Demetrius Galvan (Student) (Worcester Polytechnic Institute)
Pradeep Radhakrishnan (Associate Teaching Professor) (Worcester Polytechnic Institute)
David C Brown (Professor) (Worcester Polytechnic Institute)

An Empirical Study of Programming Languages Specified in Engineering Job Postings
Lisa Schibelius (Graduate Student)
Amanda Ross (Virginia Polytechnic Institute and State University)
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)

Analyzing the use of auto-graded labs with a built-in simulator to learn assembly programming
Chi Yan Leung (zyBooks, A Wiley Brand)
Chelsea Gordon
Efthymia Kazakou (Ms) (zyBooks, A Wiley Brand)
Yamuna Rajasekhar (zyBooks, A Wiley Brand)

Using a theoretical model to understand how virtual reality influences engineering student’s learning processes – A work in progress
Adurangba Victor Oje (Mr)
Nathaniel Hunsu (University of Georgia)
Dominik May
Robert A Baffour (Dr.) (University of Georgia)
M36445 - Technology Integration in Manufacturing Curriculum

9:45 am - 11:15 am
102D, Convention Center

Moderators: Faisal Aqlan, Md Fashiar Rahman (University of Texas at El Paso)

A framework for Industry 4.0 workforce training through project-based and experiential learning approaches

Joseph Ekong
Vedang Dilipkumar Chauhan (Assistant Professor) (Western New England University)
Janose Osedeme
Joseph Ekong
Seyed Niknam (Western New England University)
Richard anthony nguyen

Additive Manufacturing-Enabled Modular Drone Design Development by Multidisciplinary Engineering Student Team

Firas Akasheh (Associate Professor) (Tuskegee University)
Mandoye Ndoye (Assistant Professor) (Tuskegee University)
David Shannon (Dr.) (Auburn University)
Ryan Pippins (Tuskegee University)
Eugene Thompson (Tuskegee University)
Adrian Carter (Tuskegee University)
Stephen Baker (Tuskegee University)
Brandon Guiseppi

MAKER: A class project on the design and fabrication of a 3D printer for delivering food at the point-of-care for addressing food insecurity – Manufacturing for social purpose

Ajay P. Malshe (Distinguished Professor) (Purdue University at West Lafayette (COE))
Salil Bapat (Research Scientist) (Purdue University at West Lafayette (COE))

Non-traditional Delivery of Hands-on Manufacturing Courses

Ismail Fidan (Professor)
Marshall Norris (Tennessee Technological University)
Mithila Rajeshirke (Tennessee Technological University)
Orkhan Huseynov (MSc) (Tennessee Technological University)
Suhas Alkunte (Tennessee Technological University)
Mohammad Alshaikh Ali (Tennessee Technological University)
Joji Jeevan Kumar Dasari (Mr) (Tennessee Technological University)
Zhicheng Zhang (Tennessee Technological University)

Exploring the Quality of Course Deployment in Engineering Education: A Quantitative Assessment using Quality Function Deployment

Tzu-liang Bill Tseng (Professor and Chair) (University of Texas at El Paso)
Md Fashiar Rahman (University of Texas at El Paso)
Aditya Akundi (Assistant Professor)
Richard Chiou (Associate Professor) (Drexel University)

M53424 - Women in Engineering Division (WIED) Business Meeting

9:45 am - 11:15 am
M100FG, Convention Center

WIED invites all members and those wishing to learn more about the division to its business meeting at the ASEE Annual Conference.

M536 - IEEE Education Society Executive Committee Meeting

9:45 am - 11:15 am
M100B, Convention Center

M37549 - Materials Division Business Meeting

9:45 am - 11:15 am
M100A, Convention Center

M39158 - Mechanical Engineering: Demos and Interactives

9:45 am - 11:15 am
209, Convention Center

Speaker: Mohammad Shafinul Haque

From textbooks to augmented reality, helping students visualize what they’re studying

Impact of In-Class Demonstration on Student Performance
in an Introductory Thermodynamics Course

Haejune Kim (Assistant Professor of Instruction) (Texas A&M University)
Phapanin Charoephol (Assistant Professor of Instruction)

Complementary virtual and hardware labs for teaching control systems to undergraduate mechanical engineers as a textbook alternative.

Brendan Smith (Professor) (Loyola Marymount University)

Design, Fabrication, and Testing of Next Generation Desktop Learning Modules for Chemical and Mechanical Engineering Education

Aminul Islam Khan
Olivia Reynolds (Graduate Student)
Mohammad Robiul Hossan (Associate Professor) (University of Central Oklahoma)
David B. Thiessen (Scholarly Assistant Professor)
Bernard J. Van Wie (Professor)
Prashanta Dutta (Professor) (Washington State University)

Opening Up the Black Box: an Augmented Reality Look into the Scanning Electron Microscope

Megan Ngo
Emily Welsh
Kachina Studer
Benita Comeau (Massachusetts Institute of Technology)
Nicholas Xuanlai Fang (Massachusetts Institute of Technology)
John Liu (Dr.)

M547 - Let’s Talk About Leaving: A Workshop on Attrition and Departure from the Engineering Doctorate for Administrators, Advisers, Mentors, and Graduate Students

9:45 am - 11:15 am
Nicollet A, Hyatt Regency

Moderator: Catherine Berdanier

This workshop stems from results from Dr. Catherine Berdanier’s ongoing NSF CAREER grant entitled “Characterizing Master’s-Level Departure from the Engineering Doctorate through Multiple Stakeholders’ Perspectives.” National statistics compel attention to graduate attrition and persistence in engineering: The ten-year completion rates for U.S. domestic engineering PhDs are 65% for men and 56% for women, with estimates much lower for students from marginalized groups.

M86164 - NEE Technical Session - Innovative Teaching Strategies II

9:45 am - 11:15 am
200H, Convention Center

Moderator: Corey Kiassat, PhD, MBA, PE
Speaker: Ashish D Borgaonkar (Assistant Professor)

Work-in-Progress: Engineers Transitioning from an Industrial Position to Full-time Academic Position in an Engineering College

Matthew Alexander
NAZMUL RAHMANI (Texas A&M University - Kingsville)

Digital Image Correlation (DIC) Techniques in Learning Classical Mechanics

Ariful Bhuiyan
Jana M Willis (Professor)
Roberto Dugnani
Felipe Trujillo-Wheeler (University of Houston - Clear Lake)

Leveraging service-learning and outreach projects in STEM programs to achieve higher learning objectives
Melissa Ann Moorehouse

M77272 - Biomedical Engineering Speed Networking Session

9:45 am - 11:15 am
Nicollet D1, Hyatt Regency

Moderators: Casey Jane Ankeny (Associate Professor of Instruction) (Northwestern University), Rachel C Childers (Assistant Professor) (The Ohio State University)

This speed networking event kicks off the Biomedical Engineering Division (BED) programming at the ASEE conference. The goal of this session is to develop connections and build community among educators in biomedical engineering. The format will consist of 1-on-1 pairings followed by small-group discussion. Join new and returning members of the BED community to exchange ideas and expand your professional network.
M75560 - Member Feedback on the New ASEE Website, Business, and Paper Management Systems

9:45 am - 11:15 am
Ballroom B, Convention Center

Member Feedback on the New ASEE Website, Business, and Paper Management Systems

M73301 - Best DEI Paper Award Finalists

9:45 am - 11:15 am
Lakeshore A, Hyatt Regency

Moderator: Elizabeth Litzler (Director) (University of Washington)
Speaker: Homero Murzi (Assistant Professor)

The finalists for this year's Diversity, Equity, and Inclusion Best Paper Award will be presented in this session

M727 - Equity, Culture & Social Justice in Education Division Technical Session 4

9:45 am - 11:15 am
205A, Convention Center

Moderator: Dina Verdin (Assistant Professor)

“Man, I am a Black Engineer”: The Co-development of Transformational Resistance and Engineering Identity
Anne Marguerite McAlister (Anne McAlister) (University of Virginia)
Jessica L McDermott (University of Virginia)
Lindsay Wheeler

We Deserve Education Without Trauma: The Occurrence of Spirit-Murdering on Black Womxn in Engineering Doctoral Programs
Fantasi Nicole (PhD Student)

Undefeated - Black Collegiate Women in Volleyball and STEM
DeLean Tolbert Smith (Assistant Professor)
Leroy L. Long (Associate Professor of Engineering Fundamentals) (Embry-Riddle Aeronautical University - Daytona Beach)

Aishwary Pawar

Invisibilized Hypervisibility: Black STEM Doctoral Students, HBCUs, and Mentoring
Lisa Merriweather (Dr)
Marah Catherine Lambert
Shaunelle Camille Casey
Cathy Howell (Clinical Assistant Professor) (University of North Carolina at Charlotte)
Niesha C Douglas (Dr.)

Higher Education Computing Curriculum for the Black Community: A Review
Simone Smarr (University of Florida)
Juan E Gilbert (Andrew Banks Family Preeminence Endowed Chair) (University of Florida)

M90319 - Gender & Racial Equity in Engineering - Perspectives from Academia

9:45 am - 11:15 am
102E, Convention Center

Moderators: Jena Shafai Asgarpoor (Professor of Practice & MEM Program Director), Eric Specking (Assistant Dean for Enrollment Management and Retention)
Speakers: Stephanie G. Adams (Dean and Lars Magnus Ericsson Chair Office of the Dean of Engineering) (University of Texas at Dallas), Adrienne Minerick, Meagan Pollock, Patrice Nicole Sims (Assistant Director of JEDI) (University of Arkansas)

When it comes to equity for women, the engineering and tech industry has a lot of work to close the gap. Here are some statistics: Only 13% of engineers are women; women engineers earn 10% less than male engineers; 61% of women engineers report that they must prove themselves repeatedly to get the same level of respect and recognition as their colleagues; 48% of women in STEM jobs report discrimination in the recruitment and hiring process; 39% view gender bias as a primary reason for not being offered a promotion; and 66% report there is no clear path forward for them in their career at their current companies.

M8888 - PCEE Technical Session 5: STEM Teacher Instructional Moves

9:45 am - 11:15 am
103A, Convention Center

**Moderator: Rebekah J Hammack (Assistant Professor)**

**Speakers:** Shaffiq Nazir Welji (Student) (University of Georgia), Pamela S. Lottero-Perdue (Professor of Science & Engineering Education) (Towson University), Farah Faruqi (PhD student) (University of Minnesota - Twin Cities), Benny Mart Hiwatig

The papers presented in this session include:

1. **Analyzing Teacher Supports for Collective Argumentation in Integrative STEM Classrooms (RTP)**
   - Shaffiq Nazir Welji (Student) (University of Georgia)
   - James Drimalla
   - Barbara A Crawford
   - Aida Alibek (University of Georgia)
   - AnnaMarie Conner
   - Lorraine Franco
   - Jenna Menke (University of Georgia)
   - Tim Foutz (Professor)

2. **Simulated Engineering Teaching Experiences: Preservice Teachers Learning to Facilitate Discussions to Help Students Become Informed Designers (RTP)**
   - Pamela S. Lottero-Perdue (Professor of Science & Engineering Education) (Towson University)
   - Jamie Mikeska

3. **Manifestation of Integration into Practice: A Single Case Study of an Elementary Science Teacher in Action (RTP)**
   - Farah Faruqi (PhD student) (University of Minnesota - Twin Cities)
   - Khomson Keratithamkul (PhD candidate) (University of Minnesota - Twin Cities)
   - Gillian Roehrig (Professor)
   - Benny Mart Hiwatig
   - Elizabeth Forde
   - Nilay Ozturk (University of Minnesota)

4. **Examining Student Cognitive Engagement in Integrated STEM (Fundamental)**
   - Benny Mart Hiwatig

Gillian Roehrig (Professor)
Joshua Alexander Ellis (Associate Professor of STEM Education)
Mark Rouleau

**M34194 - International Division Technical Session 5: COVID-19 Pandemic Lessons and Best Practices**

9:45 am - 11:15 am

103C, Convention Center

**Moderator: Nicole Sanderlin**

**Subtheme: COVID-19 Pandemic Lessons and Best Practices**

**Advancing Global Competencies within a Required Global Engineering Course During COVID-19**
- Hans Tritico
- Okechukwu Ugweje (Professor) (University of Mount Union)
- Chad S. Korach (Associate Professor and Director, School of Engineering) (University of Mount Union)
- Ethan Andrew Shirley (University of Michigan)

**COVID-19 and U.S. Higher Education: The Realities of Undergraduate International STEM Students’ Experiences**
- Arianna Cooper
- Trina Fletcher

**A Project-Based Learning (PBL) Course Offered in Bulgaria in a Fulbright U.S. Scholar Project During the Pandemic**
- Yanjun Yan (Dr.) (Western Carolina University)
- Ivo Rumenov Draganov (Mr)
- Hugh Jack (duplicate) (Distinguished Professor) (Western Carolina University)
- Tasho Tashev
- Mary Anna Lafratta (Professor)

**Work-in-Progress: Running an in-person NSF IRES Program in South Korea before and during COVID-19**
- Gloria J Kim (Associate Chair)
- Yong Kyu Yoon
- Jin-woo Choi (Professor) (Louisiana State University and A&M College)

**M35 - ECE Division Technical Session 1: Online or Remote Teaching and Curricular**
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

Developments
9:45 am - 11:15 am
202, Convention Center

Moderators: Scott Dunning (Director, Undergraduate ECE Program) (Virginia Polytechnic Institute and State University), Lane Elien (Lecturer 1) (Grambling State University)

This ECE Division technical session focuses on online or remote teaching and curricular developments.

Development of A Remote-Access, Simulator-Enabled, Team-Friendly Lab for an Electric Machines Course
L. Brent Jenkins (Associate Professor) (Kennesaw State University)

Electrical Circuits Virtual Lab
Zekeriya Aliyazicioglu (Professor) (California State Polytechnic University, Pomona)
Dennis Dahlquist (Professor) (California State University, Sacramento)

Traffic Lights Engineering Academy: A Remote Online Education Solution for Creating K-12 STEM Projects Featuring Microcontrollers
Hechuan Wang (Stony Brook University)
Kathleen Ann Dinota
Monica Bugallo (Dr) (Stony Brook University)

Using a Hyflex Learning Format in a Second-year Mechatronics Course
Eleanor Leung (Assistant Professor) (York College of Pennsylvania)
James A. Kearns (Associate Professor) (York College of Pennsylvania)

Effect of Active Learning on Students’ Performance in Remote ECE Classes with Lab Sections
Ahmed Dallal (Professor)
Mohamed A. S. Zaghloul
Amr Hassan (Assistant Professor)

Challenges and Experiences of Converting an Assembly Language and Computer Organization Course into an Online Course
Weiying Zhu (Full Professor) (Metropolitan State University of Denver)

M35306 - Reflections on 20 years of Embedded Engineering Communications Programs

at Georgia Tech: Educational Impact, Lessons Learned, and the Path Forward
9:45 am - 11:15 am
Northstar A, Hyatt Regency

Background: In the College of Engineering at Georgia Tech, technical communication skills are primarily taught through an in-house model by faculty with degrees in English, rhetoric, and communication who are embedded within most of the individual engineering schools: Chemical and Biomolecular, Civil and Environmental, Electrical and Computer, Industrial, Materials Science, and Mechanical. The effectiveness of integrating communication instruction within the engineering curriculum has been demonstrated through research and program assessment.

M178 - Equity, Culture & Social Justice in Education Division Technical Session 5
9:45 am - 11:15 am
205D, Convention Center

Moderator: Deepak R Keshwani (Associate Professor of Biological Systems Engineering)

10 Tips to Make Your Course More Accessible and Inclusive to Disabled Students
Mariah Arral

WORK IN PROGRESS: EMPOWERING STUDENTS WITH DISABILITIES THROUGH RESEARCH INVOLVEMENT
Sarah Furtney
Caroline Marie Doyle

Supporting STEM graduate students with dis/abilities: Opportunities for Universal Design for Learning
D. C. Beardmore
Robyn Sandekian (Director of Faculty Advancement) (University of Colorado Boulder)
Angela R Bielefeldt (Professor)

Kasia Gallo
Aileen Huang-saad (Associate Professor)
Cheryl Gomillion
Chartrisa Lashan Simpson (Associate Professor) (Mississippi State University)

Work-in-Progress: Inclusive Mentoring Strategies for Neurodivergent Undergraduate Researchers in STEM

Jeffrey Halpern
Mariah Arral
Julianna Gesun

Initiating and Developing an Inclusive Physical Spaces Committee
Joseph H Holles (Professor)

M22 - Aerospace Division Technical Session 5: Pedagogy and Curriculum

9:45 am - 11:15 am
205C, Convention Center

Enhancing Professional Interdisciplinary Engineering Skills Through the Application of Unmanned Aircraft Systems to Solve Real-World Remote Sensing Missions

Michael C. Hatfield (Associate Director of Science & Education, Alaska Center for Unmanned Aircraft Systems Integration) (University of Alaska Fairbanks)
Haley Nelson
Brian C Holst
Tad J Nelson (University of Alaska Fairbanks)

Enhancing Students’ Understanding of Deformation and Stress in Aerospace Structures Education via Virtual Labs

Waterloo Tsutsui (Senior Research Associate)
Kenneth Park
Christopher Shueh-chen Sculley
Ian Copenhaver (Purdue University at West Lafayette (COE))
Marcial Gonzalez
Wayne Chen
George Takahashi
Michael David Sangid (Elmer F Bruhn Associate Professor of Aeronautics and Astronautics)

A Model for Student-led Development and Implementation of a Required Graduate-level Course on History, Ethics, and Identity in Aerospace Engineering

Emily Hope Palmer (California Institute of Technology)
Jacqueline Rose Tawney (California Institute of Technology)
Jennifer Weaver

Work-in-progress: Reflection & Projection: An Exploration of a Scavenger Hunt Assignment in an Introduction to Aerospace Engineering Course

Kali Morgan
Kelly Ann Griendling (Georgia Institute of Technology)
Jakob Ryan Kinney (Georgia Institute of Technology)

M22365 - Lightning Talks

9:45 am - 11:15 am
Greenway CDE, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below. Short presentations by the ELD members.

M99 - CIT Division Technical Session #3

9:45 am - 11:15 am
M101C, Convention Center

Moderator: Reza Sanati-mehrizy (Professor) (Utah Valley University)

Speakers: Margaret O’neil Ellis, Bailey Bond-Trittipo, Emmanuel Johnson (Postdoctoral Research Associate) (University of Southern California)

The following papers will be presented during this session:085: Using High Impact Practices to Broaden Undergraduate Participation in Computer Systems Research (Margaret O’apos;Neil Ellis)109: Future Career Pathway Perceptions of Low-Income Computing Students (Bailey Bond-Trittipo)114: Developing Computer Science and Computational Thinking Career Interest via Adaptive Content for Middle School Students (Emmanuel Johnson)130: Essential Experiences for Computer Science Graduates (Reza Sanati-Mehrizy)

Using High Impact Practices to Broaden Undergraduate Participation in Computer Systems Research

Margaret O’apos;&#39;Neil Ellis
Godmar Back (Assistant Professor) (Virginia Polytechnic Institute and State University)
Crystal M Pee (Student-Chemical Engineering)
Kirk Cameron
Walter C. Lee (Associate Professor)

Future Career Pathway Perceptions of Low-Income Computing Students Through the Lens of Capital

Bailey Bond-Trittipo
Nivedita Kumar
Stephen Secules (Assistant Professor)

Developing Computational Thinking skills and STEM+C Career Interest through Adaptive Content Curation for Middle School Students

Emmanuel Johnson
Teresa M Ober (Assistant Research Professor)
Mayank Kakodkar (Purdue University at West Lafayette (COE))

Essential Experiences for Computer Science Graduates
Reza Sanati-mehrizy (Professor) (Utah Valley University)
Afsaneh Minaie

M103 - Construction Engineering Division Technical Session 5
9:45 am - 11:15 am
102B, Convention Center

Moderators: Sanjeev Adhikari (Dr.) (Kennesaw State University), Nicholas Tymvios (Assistant Professor)

Industry-Academia collaboration on 4D BIM modeling to enhance the understanding of Construction Scheduling
Sanjeev Adhikari (Dr.) (Kennesaw State University)
Sandeep Langar (Dr.) (The University of Texas at San Antonio)
Rachel Mosier (Associate Professor)

BIM: A Bridge to Promote Industry-Academic Partnership in Construction Engineering
Brayan Alexander Díaz (North Carolina State University at Raleigh)

Leveraging marker-based augmented reality for interactive Construction education
Mayank Patel (University of Houston)
krthikashree lakshminarayanan
Zia Ud Din (Assistant Professor)

Lessons learned from the development of immersive virtual reality-based collaborative architecture, engineering, and construction (AEC) education environment
Zia Ud Din (Assistant Professor)

Perception of Students’ understanding of BIM with Sustainable Design
Sanjeev Adhikari (Dr.) (Kennesaw State University)
Tran Duong Nguyen

Cross Review of Collaboration in a Design-Build Studio
Saeed Rokooeei (Mississippi State University)
Mohsen Garshasby (Assistant Professor) (Mississippi State University)

Afsaneh Minaie (Mississippi State University)

M11247 - CPDD Technical Session 1 - Design of Professional Development Curricula
9:45 am - 11:15 am
200B, Convention Center

Moderator: Matthew William Carver (Course Delivery Operations Manager) (Iowa State University of Science and Technology)

Explore examples of the latest developments in the design and implementation of professional development programs and courses.

Design of An Interactive Scenario-Based Technical Management Communication Course - A Unique Addition to Future Engineering Leaders’ Toolbox
Wei Lu (Dr.) (Texas A&M University)
Scott Tingey (Texas A&M University)
Denise Preussler (Dr.)
Behbood Zoghi (Professor) (Texas A&M University)

Work in Progress: Aligning a Professional Development Program with Industry Needs
Audeen W. Fentiman (Crowley Family Professor in Engineering Education) (Purdue University at West Lafayette (COE))
John W. Sutherland (Chair) (Purdue University at West Lafayette (COE))
Daniel Delaurentis
Kerrie A Douglas (Assistant Professor of Engineering Education)
Jorge Dorribo Camba (Associate Professor)
C. Robert Kenley (Professor of Engineering Practice) (Purdue University at West Lafayette (COE))
Ali Khalid Raz
Adrie Koehler
Wanju Huang (Clinical Assistant Professor) (Purdue University at West Lafayette (COE))
Andrew Hurt (Assistant Professor) (Purdue University at West Lafayette (COE))

A Professional Development Program using a Low-Cost Exoskeleton Kit to Support Trainers in Translating Technical Research to Implementable Recommendations
Christian Eduardo Lourido (PhD Candidate) (New York University Tandon School of Engineering)
Hao Su (Su)
Vikram Kapila (Professor) (New York University Tandon School of Engineering)
M15217 - ERM: Engineering Identity: (Identity Part 1)

9:45 am - 11:15 am

212, Convention Center

Moderators: Saralyn McKinnon-Crowley (Postdoctoral Fellow), Hannah Budinoff (Assistant Professor) (The University of Arizona)

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Papers in this first installment (session) focus on engineering identity development.

Students’ Perceptions of their Engineering Identity Development and REU Summer Program Experiences: An Equity-Centered Analysis

Ciera Fluker (Research Graduate Assistant)

Lara Perez-Felkner (Associate Professor of Higher Education and Sociology)

Kiaira McCoy (Florida A&M University - Florida State University)

The Impact of STEM Extracurricular Learning Experiences on Freshman Engineering Students’ Engineering Identity

Leyi Chen

Jiabin Zhu

Zhinan Zhang (Dr.)

Chaoqun Zheng

Integrating Asset-based Practices into Engineering Design Instruction

Hannah Budinoff (Assistant Professor) (The University of Arizona)

Vignesh Subbian (Assistant Professor) (The University of Arizona)

Francesca Lopez (Professor)

Should Professional Engineering Identity be the only Identity Considered when Developing Programs?

Meena Thiyagarajah

Kent J. Crippen (Professor of STEM Education) (University of Florida)

Bruce Frederick Carroll (Associate Professor)

Tracy L. Johns (University of Florida)

M21370 - Imagining the Research Agenda for ASEE LEAD

9:45 am - 11:15 am

Lakeshore C, Hyatt Regency

This special session provides an interactive opportunity to imagine the future of the ASEE LEAD Division's research agenda. The session will consider the recently published New Directions for Student Leadership, No. 173, on student leadership development in engineering and a review of ASEE LEAD conference publications since 2015 to identify the current state of the ASEE LEAD research agenda. Interactive small-group design activities will build on this foundational knowledge to imagine future directions for the Division's research agenda over the next 5-10 years. For experienced members, please come and share your insights and perspectives to strengthen the community’s practice. For newcomers, this will be a great opportunity to meet and interact with the Division's leadership and provide the Division with fresh perspectives!

Mapping Engineering Leadership Research through an AI-enabled Systematic Literature Review

Meagan R. Kendall (Associate Professor)

Brian J Novoselich (Lieutenant Colonel)

Meg Handley (Associate Teaching Professor; Associate Director of UG Programs) (Pennsylvania State University)

Matthew Dabkowski
2022 ASEE ANNUAL CONFERENCE
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M1575 - ERM: Mental Health and Wellness

9:45 am - 11:15 am
101D, Convention Center

Moderators: Benjamin Ahn (Associate Professor), Cheryl Carrico (Owner, E4S, LLC)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Interesting new work in the space of mental health and wellness - a topic of even greater importance these days!

Coping Landscapes: How graduate engineering students’ coping mechanisms correspond with dominant stressors in graduate school
Gabriella M Sallai (Pennsylvania State University)
Johnathan P Vicente (Research Assistant)
Kanembe Shanachilubwa
Catherine Berdanier

Work-In-Progress: Measuring Systemic Educational Wellness using the Eco-STEM Educational Ecosystem Health Survey
Corin (Corey) Bowen
Lizabeth L Thompson (Professor)
Gustavo B Menezes (Professor)
Christina Restrepo Nazar (California State University, Los Angeles)

Working Full Time and Earning an Engineering Degree: Wellbeing in a Co-Op-Based Engineering Program
Catherine Mcgough Spence (Assistant Professor) (Minnesota State University, Mankato)
Luke John Nyberg
Justine Chasmar (IRE Professor) (Minnesota State University, Mankato)
Jodi Nelson (IRE Bell Facilitator) (Minnesota State University, Mankato)
Marissa Tsugawa

Engineering Stress Culture in Project-based Engineering Programs
Lin Chase (Minnesota State University, Mankato)
Michelle Soledad (Assistant Professor)
Catherine Sleezer
Rob Sleezer (Associate Professor, Twin Cities Engineering)

Faculty-Student Interaction and Its Impact on Well-Being in Higher Education for STEM
Courtney E Holles (Teaching Professor) (Colorado School of Mines)

Investigating mental health distress and help-seeking perceptions in first-year engineering students
Sarah A Wilson (Assistant Professor)
Katie Wilder (University of Kentucky)
Whitney C Blackburn-lynch (Lecturer)
Joseph H Hammer
Daniel A. Dailey (University of Kentucky)

M42163 - Multidisciplinary Engineering Division Technical Session - NAE Grand Challenges, Graduate Students, Sustainability, and Makerspaces

9:45 am - 11:15 am
210, Convention Center

Moderators: Stephen Andrew Wilkerson (Assistant Professor), Trevor Mackesey

An Improvement of an Engineering Course that Presents and Promotes the NAE’s Twenty First Century Grand Challenges and Program
Olgha Bassam Qaqish (Associate Director of the Engineering Grand Challenges Scholars Program)
David W. Parish (Assistant Dean of Engineering) (North Carolina State University at Raleigh)

Work in Progress: Engaging Graduate Students as Co-creators of Educational Modules on an Interdisciplinary Topic
Susan Thomson Tripathy (Dr.) (University of Massachusetts Lowell)
Trina C. Kershaw
Kavitha Chandra (Prof.)
Jorge Alexander Allen (University of Massachusetts Lowell)
Max Denis (University of the District of Columbia)
Hong Liu (Associate Professor) (University of Massachusetts Dartmouth)
Tzuyang Yu (Professor) (University of Massachusetts Lowell)

Work-In-Progress: Make It Count - Supporting Makerspace Course Outcomes With Blended Learning
Anna Engelke

Revising the Requirements of a Cross-Departmental Project-Centric Undergraduate Engineering Program and Launching a new Sustainability and Climate-themed Track
Rea Lavi (Dr.)
Justin A. Lavallee (Lead Technical Instructor) (Massachusetts Institute of Technology)
Nathan Melenbrink (Massachusetts Institute of Technology)
Amitava ’Babi’ Mitra (Executive Director, New Engineering Education Transformation) (Massachusetts Institute of Technology)

M17188 - Energy Conversion and Conservation Technical Session
5: Strategies for Increasing Classroom Engagement
9:45 am - 11:15 am
206, Convention Center

Moderators: Seyed Mousavinezhad, Matt Aldeman (Associate Professor)

Speakers: Kenneth Walz (Professor) (Madison Area Technical College), M. David Burghardt (Professor), Tooran Emami (Associate Professor), Sheldon M. Jeter (Associate Professor) (Georgia Institute of Technology)

Speakers at this session will present papers relating to strategies for increasing student engagement in engineering classrooms.

Work in Progress--Analysis of Flipped Classrooms in Thermodynamics Courses
M. David Burghardt (Professor)
Deborah Hecht (Center Director)

Delivery and Impact of Virtual Teacher Professional Development Workshops
Kenneth Walz (Professor) (Madison Area Technical College)
Michael Arquin
Joel B Shoemaker (Instructor) (Madison Area Technical College)
Scott William Liddicoat (Educator, Trainer, Writer)
Gabrielle P Temple (NSF CREATE Co-PI Project Manager)
Kathleen Alfano (NSF CREATE Center co-PI) (College of the Canyons)

An Innovation Methodology to Increase Students Performance in Hybrid Classroom and Virtual Environment
Tooran Emami (Associate Professor)

Materials and Resources for Energy Education Programs
Kenneth Walz (Professor) (Madison Area Technical College)
Kevin Cooper (Indian River State College)
Benjamin Reid
Christopher Baechle (Indian River State College)
Christopher John Akeliani (Cuesta College)
Kathleen Alfano (NSF CREATE Center co-PI) (College of the Canyons)

M375278 - ASEE Bistro
Sponsored by Mouser Electronics
10:30 am - 5:00 pm
Exhibit Hall B & C, Convention Center

M39159 - Mechanical Engineering: Assorted Topics
11:30 am - 1:00 pm
209, Convention Center

Speaker: Ahmet Can Sabuncu (Assistant Teaching Professor)

Lean Practices in Academia; A Comprehensive Review and a New Provisional Model
Simin Nasseri (Dr)
Mohammad Jonaidi
Navid Nasajpour Esfahani (Georgia Institute of Technology)
Ralph Schultz (Kennesaw State University)

WIP: A visual and intuitive approach to teaching first order systems to Mechanical Engineering students
Daniel Raviv (Professor)
Daniel Ryan Barb
George Roskovich (Research Assistant) (Florida Atlantic University)

Vibration Analysis Projects of Lumped-Parameter and Distributed-Parameter Systems
Shengyong Zhang (Associate Professor of Mechanical Engineering)

Multi-Material Optimization of a Simplified Railcar Truck Stand
Raghu Echempati (Professor) (Kettering University)

Assessing ABET Student Outcome 7 (New Knowledge) with Measurement Systems
James A. Mynderse (Dr.) (Lawrence Technological University)
M73405 - ASEE Commission on Diversity, Equity, and Inclusion Annual Meeting & Roundtable

11:30 am - 1:00 pm
M100A, Convention Center

Commission on Diversity, Equity, and Inclusion Annual Meeting & Roundtable. All are welcome!

M922 - Computing & Information Technology Division Technical Session 4

11:30 am - 1:00 pm
M101C, Convention Center

Moderator: Afsaneh Minaie
Speakers: David Liu (Purdue University Fort Wayne), Kylan Nicole Stewart

The following papers will be presented in this session:

- **Prepare Data Science Program Student Outcomes and Curricula for ABET Accreditation** (David Liu)
- **An Equity-minded Assessment of Belonging Among Computing Students** (Kylan Nicole Stewart)
- **Capstone Courses in a New ABET Accredited Electrical & Computer Engineering Program** (Afsaneh Minaie)
- **Undergraduate Students’ Motivation to Learn, Attitudes, and Perceptions of Assessments in a Cybersecurity Course** (Tahir M. Khan)

**Prepare Data Science Program Student Outcomes and Curricula for ABET Accreditation**
David Liu (Purdue University Fort Wayne)

**An Equity-minded Assessment of Belonging among Computing Students**
Kylan Nicole Stewart
Bruce Debruhl
Zoe Wood (Professor)

**Capstone Courses in a New ABET Accredited Electrical Engineering Program**
Afsaneh Minaie
Reza Sanati-mehrizy (Professor) (Utah Valley University)

**Undergraduate Students’ Motivation to Learn, Attitudes, and Perceptions of Assessments in a Cybersecurity Course**
Tahir M Khan

M15672 - ERM: Let’s Talk about Tests! (Tests Part 1)

11:30 am - 1:00 pm
101D, Convention Center

Moderators: Kelsey Scalaro (Graduate Student), Holly M Golecki (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Everyone’s favorite (or least favorite) summative assessment! Come hear about new work exploring tests!

**Is performance on tests affected by the difficulty of the first question and an informational message about the benefits of the testing effect?**
- Bruno Korst (Assistant Professor, Teaching Stream) (University of Toronto)
- Dan Wolczuk (University of Waterloo)
- Daniel Smilek (Professor) (University of Waterloo)

**Can Oral Exams Increase Student Performance and Motivation?**
Nathan Delson (Professor)
Saharnaz Baghdadchi (Teaching Professor)
Maziar Ghazinejad (Assistant Teaching Professor) (University of California, San Diego)
Marko Lubarda (Assistant Teaching Professor) (University of California, San Diego)
Mia Minnes (Associate Teaching Professor) (University of California, San Diego)
Alex M Phan (University of California, San Diego)
Curt Schurgers (Teaching Professor) (University of California, San Diego)
Mia Minnes (Associate Teaching Professor) (University of California, San Diego)
Huihui Qi

**Action-State Orientation as An Impediment to Engineering Student Success**
Paul E Spector
Chris S Fereides (Professor) (University of South Florida)
Gokhan Mumcu (Professor)
Ismail Uysal (Assistant Professor) (University of South Florida)

**Work in Progress: Improving Students’ Achievement on Summative Exams in Large Undergraduate Engineering Classes: Taking Advantage of Online Formative Assessments**
Assad Iqbal (Graduate Research Assistant)
Oenardi Lawanto (Professor) (Utah State University)
Midterm oral exams add value as a predictor of final written exam performance in engineering classes: A multiple regression analysis

Minju Kim (PhD Candidate)
Celeste Pilegard (University of California, San Diego)
Marko Lubarda (Assistant Teaching Professor) (University of California, San Diego)
Curt Schurgers (Teaching Professor) (University of California, San Diego)
Saharnaz Baghdachi (Teaching Professor)
Alex M Phan (University of California, San Diego)
Huihui Qi

Give me a coffee break! Pilot study on improving exam performance and reducing student stress

Miguelandres Guerra (Civil Engineering and Architecture)
Vanessa Guerra (Assistant Professor) (University of Virginia)

M20686 - Engineering Economy Division Business Meeting
11:30 am - 1:00 pm
M100FG, Convention Center

M22369 - ELD Networking
11:30 am - 1:00 pm
Greenway CDE, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below. Engineering Libraries Division networking session.

M75561 - Member Feedback on ASEE New Website, Business, and Paper Management Systems
11:30 am - 1:00 pm
Ballroom B, Convention Center

M85459 - ETD - Mechanical Engineering Technology Department Heads Meeting
11:30 am - 1:00 pm

M100E, Convention Center

The ME and MET Department Head community work together to encourage communication, collaboration, and innovation in education among faculty leaders of mechanical engineering and allied programs worldwide. Facilitation and encouragement of communication both among department heads/chairs and with ASME and other organizations is executed by sponsoring, organizing, and promoting involvement in forums, meetings, conferences, workshops, and other relevant events to discuss issues related to the mechanical engineering profession. Topics may include education, curricula, accreditation, student development, research, faculty development, department head/chair professional concerns, and other appropriate matters, and their relation to the professional development of mechanical engineers.
Chadia A. Aji
M. Javed Khan (Department Head)

Student Paper: Developing an Extensive Virtual Reality Environment for Learning Aerospace Concepts
Henry Thomas Wright (Graduate Student) (Saint Louis University)
Siddharth Chandra Shekar (Saint Louis University)
Luke M Giunta (Mr.)
Srikanth Gururajan (Dr.) (Saint Louis University)

Efficiency-Testing a Solar-Powered Payload for Stratospheric Ballooning
Noe Santiago Bazan Palacios (Research Assistant/Student)

Development of a Concept Hybrid Rocket Demonstrator
Dustin Scott Birch (Associate Professor - ME) (Weber State University)

Elements in an Entrepreneurial Capstone Sequence
Jean Carlos Batista Abreu (Assistant Professor) (Elizabethtown College)
Kurt DeGoede
Tomas Estrada
Brenda Read-Daily

Work-in-Progress: The Transformative Cauldron, Development of the Optimal Space-in-Between
Craig Silvernagel (South Dakota State University)
Todd Letcher (South Dakota State University)
Kay Cutler (Professor)

Infusing Entrepreneurship into Engineering Design Curricula to Promote Inventiveness: A Student-Centered Approach to Inclusive Innovation
Roxanne Moore
Leslie Flynn (The University of Iowa)
Stephanie Couch (Massachusetts Institute of Technology)
Nisha Detchprohm (Research Engineer I) (Georgia Institute of Technology)
W. Ethan Eagle (Lecturer)
Joanna K. Garner (Executive Director) (Old Dominion University)
Leigh B. Estabrooks (Invention Education Officer)
Adam Maltese (Martha Lea and Bill Armstrong Chair for Teacher Education)
Erica M. Matheny (Dr.)
Adam Talamantes (Program Coordinator)

M608 - SPONSOR TECH SESSION: Using the FE Exam for Effective Outcomes Assessment - Presented by NCEES

11:30 am - 1:00 pm
101A, Convention Center

Speakers: Bobby Crawford (Professor of Mechanical Engineering) (Quinnipiac University), John W. Steadman (Dean Emeritus)

This is a ticketed session. To add this ticket to your registration, please click the button below. Speakers: Grant Crawford, Ph.D., P.E., F.ASEE John W. Steadman, Ph.D., P.E., F.ASEE. This session highlights best practices in outcomes assessment using the NCEES Subject Matter Reports to provide participants with information about the strengths and weaknesses of students in a program. The presentation will specifically focus on using the FE results as one tool in assessing the ABET student outcomes. Attend and learn more about how the FE exam can be an effective tool for your program.

M2538 - Entrepreneurship & Engineering Innovation Division Technical Session 1

11:30 am - 1:00 pm
200E, Convention Center
Moderator: Ginger Scarbrough

Implementation of Industry-Inspired Project Management

M765 - Civil Engineering Division - Innovating New Ways to Teach

11:30 am - 1:00 pm
M100J, Convention Center

Moderators: Kristen L. Sanford (Associate Professor), Brad Wambeke (Academy Professor)

Changing how we teach can have a significant impact on student learning. Papers in this session highlight innovative changes that range from addressing a specific course to the entire teaching methodology. A great opportunity to gain new ideas.

Using Scaled Realistic Building Models for Classroom Instruction
Nicholas Tymvios (Assistant Professor)
Miles Book
Elif Miskioglu (Assistant Professor)
Gugulethu Sibanda (Bucknell University)
Meaghan Elizabeth Yant (Bucknell University)

I Think We Should Break Up...Class, That Is
Matthew Swent
Benjamin Z. Dymond (Associate Professor) (University of Minnesota Duluth)
David Saftner
Camilla M. Saviz (Professor and Chair)
Jeffrey Shafer (University of the Pacific)
Kacie Caple D&39;Alessandro (Visiting Assistant Professor) (Virginia Military Institute)
Tanya Kunberger (Professor & Chair) (Florida Gulf Coast University)
Christopher R. Shearer (Associate Professor)

Teaching Post-Tension Concrete Design: Leveraging Practical Industry Expertise
Ryan Solnosky (Associate Teaching Professor)
M K Parfitt

Teaching from Multiple Angles: Aligning the Teaching Materials and Activities with Preferred Learning Styles of the Students
Ismail Haltas

Teaching Techniques and How Faculty Engage the Engineering Classroom
Scott R Hamilton (Professor, Civil Engineering)
Tanya Kunberger (Professor & Chair) (Florida Gulf Coast University)
David Saftner
Camilla M. Saviz (Professor and Chair)

M77122 - Biomedical Engineering Division: Supporting and Evaluating Student Learning in BioE/BME Courses
11:30 am - 1:00 pm
210, Convention Center
Moderators: Ruth Ochia (Professor of Instruction), Daniel P Cavanagh (Associate Professor) (Bucknell University)

This Biomedical Engineering technical session will include four full-paper presentations from authors who have performed studies related to supporting and evaluating student learning in Bioengineering or Biomedical Engineering courses. Moderators may encourage small group discussion or other engaging activities with attendees related to this topic in the latter part of the session.

A Qualitative Examination of Learners’ Experiences in Experiential BME-In-Practice Modules
Vibhavari Vempala
Aileen Huang-saad (Associate Professor)

Resolving Troublesome Knowledge in Engineering Physiology using ICAP framework based Problem-Solving Studio
Devina Jaiswal (Dr.)

Using the Gather Platform to Support Peer-Learning and Community in a Virtual Bioengineering Laboratory Course
Leann Dourte Segan (Practice Associate Professor)

Student Reflections on Learning as the Basis for Course Grades
Emily Dosmar (Assistant Professor) (Rose-Hulman Institute of Technology)
Julia M. Williams (Professor of English)

M270 - Thinking Through Embedded Hierarchies
11:30 am - 1:00 pm
Lakeshore A, Convention Center

M602 - SPONSOR TECH SESSION: Engineering for US All: A National Pilot Program for High School Engineering - Presented by the University of Maryland
11:30 am - 1:00 pm
101B, Convention Center

Speakers: Darryll J. Pines (President), Stacy S Klein-Gardner (Adjunct Professor), Kevin Calabro (Director) (University of Maryland College Park), Adam R Carberry (Associate Professor), Katey Shirey (eduKatey STEAM Education)

The panelists will provide an overview of the NSF-funded Engineering for US All (e4usa) program and update the community on the progress and status of this effort. The session will conclude with roundtable discussions where speakers will talk about partnership opportunities and seek guidance from session attendees. Come ready to learn
and participate!

**M5614 - Statics and Dynamics**

**Topics**

**11:30 am - 1:00 pm**

200G, Convention Center

*Moderators: Amie Baisley (Faculty), Sridhar S. Condoor (Professor) (Saint Louis University)*

In this session you will find papers on a variety of topics in statics and dynamics.

**An Adaptive Learning Engineering Mechanics Curricular Sequence**

- Katherine Saul
- Anna K. T. Howard (Teaching Professor)
- Zo Webster (North Carolina State University at Raleigh)
- Dan Spencer

**Work-In-Progress: Incorporating Open-Ended Modeling Problems into Undergraduate Introductory Dynamics Courses**

- Rachel Vitali (Assistant Professor)
- Nicole L Ramo (Assistant Professor) (West Chester University)
- Martell Cartaibre Bell (The University of Iowa)
- Emma Treadway (Assistant Professor)
- Alice M Nightingale
- Jessica Swenson
- Aaron W. Johnson (Assistant Professor)

**Teaching core engineering courses, Statics and Dynamics, considering different types of learners**

- Carmen Maria Muller-Karger (PhD)

**Comparison of Two Teaching Methods for Analyzing Fourbar Linkages**

- Amir Hossein Danesh Yazdi (Assistant Professor of Mechanical Engineering)
- Shraddha Sangelkar (Assistant Professor)
- Eric Constans (Professor) (Rose-Hulman Institute of Technology)
- Joseph Lahmann (Rose-Hulman Institute of Technology)
- Bryson Halsey

**Spring Connectivity Diagram: An Intuitive Approach to Determining the Equivalent Lumped Stiffness of a System of Springs and Simple Continuous Elements**

- Amir Hossein Danesh Yazdi (Assistant Professor of Mechanical Engineering)

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**M53263 - WIED: Support for All in the WIED Community**

**11:30 am - 1:00 pm**

102F, Convention Center

*Moderators: Kathryn E Redmond (University of Nebraska - Lincoln), Cali L. Anicha (North Dakota State University)*

Papers related to supporting all in the WIED community.

**A Longitudinal Mixed-Methods Study of Women’s Achievement and Attrition in Undergraduate Engineering Education**

- Danyelle Tauryce Ireland (Associate Director / Research Assistant Professor)
- Hyun Su Cho (University of Maryland Baltimore County)

**Designing a (Re)Orientation program for Women Computing Students at a Commuter College and Measuring Its Effectiveness**

- Ilknur Aydin
- Mary Villani
- Lisa Cullington (Associate Director) (State University of New York, College of Technology at Farmingdale)

**Avoiding Barriers: A Literature Review on the Alternative Pathways for Women in Computer Science**

- Jia Zhu
- Monique S. Ross (Assistant Professor) (Florida International University)
- Disha Patel (Florida International University)

**Supporting Faculty and Students with Disability**

- Cali L. Anicha (North Dakota State University)
- Cecilia Aragon (Professor) (University of Washington)
- Canan Bilen-Green (Vice Provost for Faculty and Equity)
- Brianna Blaser
- Sheryl Elaine Burgstahler
- Teresa Shume (Associate Professor) (North Dakota State University)

**We Are Thriving: Increasing the Number of Women in Engineering**

- Kathryn E Redmond (University of Nebraska - Lincoln)
- Grace Panther (Assistant Professor)
- Mojdeh AsadollahiPajouh
- Stacey Kulesza (Associate Professor)
- Grace J. Liang

**Building bridges industry-university: Successful stories**
of professionals in mining towards increasing women participation

Nivia Diaz (MSc. Assistant Professor) (Universidad Andres Bello)

Angeles Dominguez

Is the AEC profession a good fit for me? A Constructivist Grounded Theory on Professional Identity Formation in First-Year Architecture, Engineering, and Construction (AEC) Women

Andrea Nana Ofori-boadu (Dr.)

Victor Ofori-boadu (President/CEO)

M27207 - Faculty Development Division Technical Session 8

11:30 am - 1:00 pm

205B, Convention Center

Moderator: Melanie Villatoro (Associate professor)

Speaker: Homero Murzi (Assistant Professor)

Lesson Learned: Active Learning Coaching Program to Promote Faculty Development and Innovation in STEM Courses

Gianina Morales

Rene Alejandro Noel

Rolando Carmona Campos

Lessons learned: faculty watch parties are a powerful approach to foster diversity and inclusivity discussions

Lance Leon Allen White (Graduate Research Assistant)

Sara Amani

Rachelle Pedersen (Graduate Student)

Larry Powell (Texas A&amp;M University)

Samantha Ray

Malini Natarajarathinam (Associate Professor)

Michael Johnson (Professor)

Shawna Thomas (Instructional Assistant Professor)

John Michael Moore (Instructional Assistant Professor) (Texas A&amp;M University)

Robert Harold Lightfoot (Associate Professor of Practice) (Texas A&amp;M University)

Tracy Anne Hammond (Professor)

Karan Watson (Provost Emeritus &amp; Sr. Professor) (Texas A&amp;M University)

Shawna Thomas (Instructional Assistant Professor)

Kristi Shryock

Randy Hugh Brooks (Professor) (Texas A&amp;M University)

Robert Harold Lightfoot (Associate Professor of Practice) (Texas A&amp;M University)

Donna Jaison

Lance Leon Allen White (Graduate Research Assistant)

M84315 - Trends in Science, Technology, Engineering, the Arts, and Mathematics (STEAM) Education

11:30 am - 1:00 pm

102A, Convention Center

Moderator: Bala Maheswaran (Professor)

Speakers: Stacy S Klein-Gardner (Adjunct Professor), Marie Bukowski, Teresa L. Larkin (Associate Professor of Physics Education), Angeles Dominguez, Rachelle Reisberg (Assistant Dean, Engineering Enrollment and Retention)

This is a ticketed session. To add this ticket to your registration, please click the button below.

Increase P-12 engineering education faculty fluency with bio-inspired design and STEAM integration to impact the next generation of engineering educators and P-12 student teaching.

M10184 - Construction Engineering Division Technical Session 4

11:30 am - 1:00 pm

102B, Convention Center

There and Back Again: Lessons Learned from Facilitated Faculty Discussions on the Move Online and then Back Face to Face
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

Moderators: Meredith Kirkmann (Assistant Professor), Luciana Debs (Purdue University Programs)

Can Soil Mechanics laboratory courses use tools and lessons from online learning to enhance in-person laboratory experiences?
   Meredith Kirkmann (Assistant Professor)
   Rachel Mosier (Associate Professor)

Design of a Mechanical, Electrical, and Plumbing (MEP) Course to Enhance a New Construction Engineering Program
   Robert J. Rabb (Chair, Mechanical Engineering)
   Nahid Vesali

A Data-Driven Comparison of ABET Accredited Construction Engineering and Construction Management Programs
   Mostafa Batouli (Dr.) (The Citadel)
   Negin Shamsi (The Citadel)
   Nahid Vesali
   Rebekah Burke (Dr.) (The Citadel)

An innovative Practice of Critical Thinking in an Undergraduate Construction Course Project
   Behnam Shadravan (Assistant Professor)

The Capstone Course – A New Approach
   Fernando Romero Galvao (University of Massachusetts Amherst)
   Luciana Debs (Purdue University Programs)

Evaluating Improved Program-Level Assessment and the Subsequent Influence on Associate Constructor Exam
   Chengyi Zhang (Assistant Professor) (University of Wyoming)
   Xuanyi Zhu
   Ashleigh Nichole McManus
   Bryan Dyer
   Scott Arias (CEO)

M15242 - ERM: Diversity, Equity, and Inclusion

11:30 am - 1:00 pm
Nicollet A, Hyatt Regency

Moderators: Carmen Lilley, Matilde Luz Sanchez-pena (Assistant Professor)

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Come learn more about diversity, equity, and inclusion in engineering!

Using Prompted Reflective Journaling to Understand Nontraditional Students in Engineering
   Cory Brozina (Assistant Professor and Director of First Year Engineering)
   Aditya Johri (Professor)

Students’ Experiences of Discrimination in Engineering Doctoral Education
   Matthew Bahnson
   Elan C Hope (North Carolina State University at Raleigh)
   Derrick James Satterfield (Doctoral Candidate) (University of Nevada, Reno)
   Anitra Rochelle Alexander
   Laila Allam (North Carolina State University at Raleigh)
   Adam Kirn (Associate Professor)

Broadening Participation of Latinx in Computing Graduate Studies
   Elsa Q. Villa (Research Assistant Professor) (University of Texas at El Paso)
   Patricia Morreale (Professor) (Kean University)
   Mohsen Beheshti
   Nayda G. Santiago (Professor) (University of Puerto Rico, Mayaguez Campus)

Advancing Student Futures in STEM
   Urmii Ghosh-dastidar
   Sandie Han
   Nadia S Kennedy (Dr) (New York City College of Technology)
   Diana Samaroo
   Armando Dominguez Solis

Professional merit in engineering career advancement: Student perspectives and critiques
   Robert P. Loweth
Shanna R. Daly (Associate Professor) (University of Michigan)
Leah Paborsky
Sara L. Hoffman (Diversity, Equity, and Inclusion Research Associate) (University of Michigan)
Steve J. Skerlos (Arthur F. Thurnau Professor) (University of Michigan)

Influence of Students’ Perceived Value of Diversity in Engineering on Intentions to Persist
Blaine Austin Pedersen (Graduate Student)
Karen E Rambo-hernandez (Associate Professor)

**M15286 - Frontiers in Education Steering Committee: Open Session**

*11:30 am - 1:00 pm*
M100B, Convention Center

**Moderators:** P.K. Imbrie (Head and Professor, Department of Engineering Education and Professor, Department of Aerospace Engin), Homero Murzi (Assistant Professor), Rachel Louis Kajfez (Assistant Professor)

This is an open session for anyone to come and hear what the IEEE/ASEE Frontiers in Education Steering Committee is up to! FIE is a great conference! Come talk about it.

**M1777 - Energy Conversion and Conservation Technical Session 2: Enhancing Energy-Related Education with Student Design Projects**

*11:30 am - 1:00 pm*
102C, Convention Center

**Moderators:** Siamak Farhad (Associate Professor), Ira Harkness (Instructional Assistant Professor) (University of Florida)

**Speakers:** Blaine Jessee Porter (Associate Hardware Engineer) (Schweitzer Engineering Laboratories, Inc.), Leon Liebenberg (Teaching Associate Professor) (University of Illinois at Urbana - Champaign), Faruk Yildiz (Professor) (Sam Houston State University), Bala Maheswaran (Professor)

Speakers at this session will present papers relating to the enhancement of energy-related engineering courses by incorporating student design projects.

**Project-Based Learning: Piezoelectric Energy Wheel**
Bala Maheswaran (Professor)
Adrian Criollo
Ananya Reghupathi (Northeastern University)
Ansh Harsh Shah (Northeastern University)
Robert Lee (Northeastern University)

**Improved Operation and Protection Method for Marching Band Keyboard Platform**
Blaine Jessee Porter (Associate Hardware Engineer) (Schweitzer Engineering Laboratories, Inc.)
John Mackesy (University of Idaho)
Taylor John Leavey (University of Idaho)
Joe Law (Department Chair, Associate Professor) (University of Idaho)
Herbert L. Hess (Professor)

**WIP: Implementing Mini-Projects to Build Community and Improve Student Engagement**
Leon Liebenberg (Teaching Associate Professor) (University of Illinois at Urbana - Champaign)
Taylor Tucker (Research Assistant) (University of Illinois at Urbana - Champaign)

**Design and Construction of a 50 kW PV-based EV Fast-Charging Station as a community engagement project**
Reg Recayi Pecen (Quanta Endowed Professor) (Sam Houston State University)
Faruk Yildiz (Professor) (Sam Houston State University)

**M11371 - CPDD Networking Luncheon**

*11:30 am - 1:00 pm*
Nicollet D1, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below Networking opportunity over lunch for current and prospective members of the Continuing Professional Development Division.

**M179 - Equity, Culture & Social Justice in Education Division Technical Session 6**

*11:30 am - 1:00 pm*
205D, Convention Center

**Moderator:** Elizabeth Cady (Senior Program Officer)
Thinking Critically about Critical Research with Military Undergraduates in Engineering Education

Angela Minichiello (Assistant Professor)

Where are the Gays? A Systematized Literature Review of Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ+) STEM Practitioners

Hector Enrique Rodriguez-simmonds (Student)
Kevin Jay Kaufman-Ortiz (Graduate Student)

Engineering as “white kids’ groups”: Examining Black and Latina/o/x youths’ discussions and experiences with engineering programming.

Jacqueline Handley

Hoʻokele: Native Hawaiian and Pacific Islander Engineering Students Navigating the New Troubled Waters of Identity and Meaning

Austin Morgan Kainoa Peters (University of San Diego)
Susan M Lord (Professor & Chair)

Asian Identity in the Online Classroom

Michelle Choi Ausman
Alan Cheville (Professor)
Sarah Appelhans (Postdoctoral Research Assistant) (Bucknell University)
Melissa Shuey (Virginia Polytechnic Institute & State University)

Deconstructing the White Savior Model through Engineers Without Borders student chapters: an unlikely intervention

Lizabeth L Thompson (Professor)
Andrew Thomas Chan (California Polytechnic State University, San Luis Obispo)
Julia Cannon (California Polytechnic State University, San Luis Obispo)
Jane L. Lehr (Professor)

M18418 - Engineering Deans Council Executive Board Meeting

11:30 am - 1:00 pm
L100A, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below

EDC Executive Board Lunch Meeting

M88228 - PCEE Technical Session 8: Engineering Design in Elementary School

11:30 am - 1:00 pm
103A, Convention Center

Moderator: Shaffiq Nazir Welji (Student) (University of Georgia)

Speakers: Matthew Johnson (Associate Professor) (Pennsylvania State University), Ron K. Skinner, Nicole Alexandre Batrouny (Research Assistant) (Tufts University), Amber Simpson (Assistant Professor) (State University of New York at Binghamton)

The papers presented in this session include:

1. A Balancing Act: Elementary Teachers and their Students Balancing Trade-offs in Engineering Design Projects (Fundamental)
2. Recognition of Design Failure by Fourth Grade Students During an Engineering Design Challenge (Fundamental)
3. “So Whose Are We Doing?”: Design Ownership and Prolonged Decision Making in Elementary Engineering (Fundamental)
4. Caregiver-Child Communication of STEM Concepts with Engineering Design Tasks (Fundamental)
5. A Study of Problem Exploration Heuristics of Families (Fundamental)

A Balancing Act: Elementary Teachers and their Students Balancing Trade-offs in Engineering Design Projects (Fundamental)

Matthew Johnson (Associate Professor) (Pennsylvania State University)
Minyoung Gil (Pennsylvania State University)

Recognition of Design Failure by Fourth Grade Students During an Engineering Design Challenge (Fundamental)

Ron K. Skinner
Danielle Harlow

“So whose are we doing?”: Design ownership and prolonged decision making in elementary engineering (Fundamental)

Nicole Alexandre Batrouny (Research Assistant) (Tufts University)

Caregiver-Child Communication of STEM concepts with Engineering Design Tasks (Fundamental)

Amber Simpson (Assistant Professor) (State University of New York at Binghamton)
Jungsun Kim (Research Scientist) (Indiana University-Bloomington)
Jing Yang

A Study of Problem Exploration Heuristics of Families (Fundamental)

Amber Simpson (Assistant Professor) (State University of New York at Binghamton)
Mr. Peter N. Knox (Doctoral Candidate) (State University of New York at Binghamton)

M28428 - First-Year Programs Division Executive Board Meeting
11:30 am - 1:00 pm
L100D, Convention Center

This meeting is for members of the First-Year Programs Division executive board.

M30100 - Computers in Education 7 - Modulus 2
11:30 am - 1:00 pm
207, Convention Center

Moderator: Carlotta A Berry (Professor) (Rose-Hulman Institute of Technology)

This is a ticketed session. To add this ticket to your registration, please click the button below. In computing, the modulus operator stands for remainder. This session will highlight some of the papers that simply did not fit into the themes of the other technical sessions.

Programming learners struggle as much in Python as in C++ or Java

Chelsea Gordon
Roman Lysecky (Professor) (The University of Arizona)
Frank Vahid (Professor) (University of California, Riverside)

Towards Goal-Oriented Experiential Learning for Cybersecurity Programs

Eman Hammad (Assistant Professor)
James K. Nelson (Associate Vice Chancellor) (Texas A&M University)
John Michael Romero (Program Director) (Texas A&M University)

Secure and Upgrade Computer Science in Classrooms through an Ecosystem with Scalability & Sustainability (SUCCESS)

AFRIN NAZ (West Virginia University Institute of Technology)
Gay Bernadette Stewart (Professor) (West Virginia University)

Crafting a Degree, Empowering Students, Securing a Nation: The Creation of a Modern Cyber Security Degree for the 21st Century

Mahmoud K Quweider (Professor) (The University of Texas Rio Grande Valley)
Fitratullah Khan (Professor)
Liyu Zhang
Hansheng Lei

(GCSP) Best Practices and Challenges
11:30 am - 1:00 pm
Greenway ABIJ, Hyatt Regency

In this session, current and prospective GCSP Directors and other affiliated faculty and staff will be invited to join in discussion and sharing of practices related to developing, implementing, and maintaining a successful GCSP. GCSP Directors and community leaders will discuss and share successful practices, unique features of their GCSP, major challenges faced, special accomplishments, etc.

M34406 - International Division Business Meeting
11:30 am - 1:00 pm
M100HI, Convention Center

Business Meeting for International Division

M895 - Community Engagement Division Technical Session 2 - Community Engagement without Frontiers
11:30 am - 1:00 pm
200A, Convention Center

Moderator: Shoshanah Cohen

: Juan C. Lucena (Professor), Paul A. Leidig, David R Mikesell (Professor & Chair) (Ohio Northern University), George A Hunt (University of Nebraska - Lincoln), Michelle Schwartz

Moderator: Shoshanah CohenBringing it down from the ivory tower: Translating Engineering-for-Community-Development (ECD) graduate student research into community engagement and undergraduate student projects, Lucena et al. Engagement in Practice: Model for Project-

**Bringing it down from the ivory tower: Translating Engineering-for-Community-Development (ECD) graduate student research into community engagement and undergraduate student learning**
- Juan C. Lucena (Professor)
- Sofia Lara Schlezak (Colorado School of Mines)
- Mateo Rojas

**Teaching Students to Incorporate Community Perspective into Environmental Engineering Problem Definition through Iterative Conceptual Site Models**
- Michelle Schwartz
- Kathleen M Smits (Associate Professor of Civil Engineering) (The University of Texas at Arlington)
- Jessica Mary Smith (Professor)
- Thomas J Phelan (Associate Professor) (United States Air Force Academy)
- Rosalie O&Brien

**Engagement in Practice: Model for Project-Based Community Engagement [Central American NGO] Case Study**
- Paul A. Leidig
- Steve Crowe
- William C. Oakes (Director and Professor)

**Engagement in Practice: Community service builds excitement in design**
- David R Mikesell (Professor & Chair) (Ohio Northern University)
- Lacey Lynn Wernoch
- Alissa Ann Sayer
- Jordan Neal Mullett
- Hui Shen (Associate Professor)

**Engagement in Practice: A model for community partnership in an infrastructure capstone course**
- George A Hunt (University of Nebraska - Lincoln)
- Matthew Williamson (Assistant Professor of Practice)

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**M35717 - LEES 1: Critical Humanities and Serious Play**
**11:30 am - 1:00 pm**
**200B, Convention Center**

**Moderator:** Jennifer A Turns (Professor)

**Seeing Vs. Being: Film Representations of Women in Engineering**
- Jessica Livingston (Professor)
- Richard A House (Rose-Hulman Institute of Technology)

**Learning through Play: Using LEGO® Products, Practices, and Values to Teach Social and Ethical Aspects of Engineering Design**
- Benjamin J. Laugelli (Assistant Professor of Engineering and Society)

**Engineering Instruction, Inclusion, and Comics – Reflections from a Student Illustrator and an Instructor**
- Addison Totman (Boise State University)
- Sreyoshi Bhaduri
- Krishna Pakala (Assistant Professor)
- Cherie D. Edwards (Dr.) (Virginia Commonwealth University)
- Michelle Soledad (Associate Professor)

**Adapting a Literature-aided Design Project in Engineering Education for Improved Student Engagement**
- Kendall Teichert

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**M36326 - Future Manufacturing and Federal Support of Manufacturing Education - Invited Speaker Panel**
**11:30 am - 1:00 pm**
**102D, Convention Center**

**Moderators:** Aditya Akundi (Assistant Professor), Irina Nicoleta Ciobanescu Husanu (Associate Professor) (Drexel University)

**Description:** This panel brings together representatives from the National Science Foundation and U.S. Department of Defense to talk about ATE, Future Manufacturing, and ManTech Programs – with an emphasis on future manufacturing workforce development direction. John Jackman, Ph.D. Speaker Biography: Dr. Jackman is a program director in the Division of Undergraduate Education at the National Science Foundation where he serves as a co-lead program director for the Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR) Program. He received his Bachelor of Science degree in Chemistry from Rensselaer Polytechnic Institute and his
PhD in Industrial Engineering from Penn State University. He is currently on the faculty of Iowa State University as an Associate Professor of Industrial Engineering.

M88109 - Pre-College Engineering Education Technical Session 7: Cybersecurity and Computing

11:30 am - 1:00 pm
200C, Convention Center

Moderator: Martha Cyr

Speakers: Monica McGill (President & CEO) (CSEdResearch.org), Andey Robins (University of Wyoming), Anni Reinking

The papers presented in this session include:

1. Comparing Access and Participation Outcomes of Schools Engaged in a Multi-school CS and Cybersecurity Intervention (Evaluation)


3. Scaling to a Distributed Implementation of the Air Force JROTC Cyber Academy (Evaluation)

4. Practitioner Perspectives of the Impact of COVID-19 on CS Education in High Schools Serving Historically Marginalized Students (Fundamental)

Comparing Access and Participation Outcomes of Schools Engaged in a Multi-school CS and Cybersecurity Intervention (Evaluation)

- Monica McGill (President & CEO) (CSEdResearch.org)
- Angelica Thompson (Senior Education Researcher)
- Leigh Ann DeLyser (Executive Director)
- Stephanie B Wortel-London (Director of Research)
- Luronne Vaval

On the Development of Cybersecurity and Computing Centric Professional Developments and the Subsequent Implementation of Topics in K12 Lesson Plans (RTP)

- Andey Robins (University of Wyoming)
- Andrea Carneal Burrows (Professor)
- Mike Borowczak (Director Cybersecurity Education and Research Center)

Scaling to a Distributed Implementation of the Air Force JROTC Cyber Academy (Evaluation)

- Anni Reinking
- Monica McGill (President & CEO) (CSEdResearch.org)

Practitioner Perspectives of the Impact of COVID-19 on CS Education in High Schools Serving Historically Marginalized Students (Fundamental)

- Monica McGill (President & CEO) (CSEdResearch.org)
- Angelica Thompson (Senior Education Researcher)
- Leigh Ann DeLyser (Executive Director)
- Luronne Vaval
- Stephanie B Wortel-London (Director of Research)

M21546 - LEAD Technical Session 1: Fostering Leadership Identity Development and DEI in Engineering Students and Professionals

11:30 am - 1:00 pm
203, Convention Center

Moderators: Cindy Rottmann (Associate Director Research), Kim Graves Wolfinbarger (Director, Jerry Holmes Leadership Program for Engineers and Scientists)

The papers presented in our first Engineering Leadership Development Division (LEAD) technical session explore and assess engineering leadership programs dedicated to mentorship, career pathways, interdisciplinary EL education, and curricular integration of leadership in engineering.

Work in Progress: How Women Develop Their Leadership without Men: Women Engineering Students’ Leadership Development in Homogeneous Women Groups

- John Jongho Park (Assistant research professor) (Pennsylvania State University)
- Dena Lang (Associate Director of Engineering Leadership Research) (Pennsylvania State University)

Features of Identity-based Engineering Leadership Instruction

- Brett Tallman (Instructor) (Montana State University - Bozeman)
- William J. Schell (Associate Professor)
- Bryce E. Hughes (Associate Professor)
- Robert N Carson (Professor) (Montana State University - Bozeman)

Who identifies as an engineering leader? Exploring influences of gender, race, and professional experience

- Andrea Chan (Research Associate)
- Cindy Rottmann (Associate Director Research)
- Emily Moore (Dr)
Dimpho Radebe (PhD Student) (University of Toronto)

Is This Good For Me?: Exploring the Experiences of Black Engineers in Leadership
Katreena Thomas (Arizona State University, Polytechnic Campus)

Self-Assessment of Leadership Behaviors Over Time Among Students in A Mechanical Engineering Capstone Design Course
Rebecca Komarek
Angela R Bielefeldt (Professor)
Daniel Knight (Assessment Specialist) (University of Colorado Boulder)

M481 - Meet the Engineering Education Pioneers
11:30 am - 1:00 pm,
Lakeshore B, Hyatt Regency
Moderators: Samantha Ruth Brunhaver (Assistant Professor), Adam R Carberry (Associate Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This session provides early-career scholars and pioneers in engineering education an opportunity to interact face to face. Session attendees will have the opportunity to meet with pioneers in a roundtable format to ask questions, seek advice, and get feedback. The intended audience for this panel includes graduate students, post-doctoral scholars, and others interested in the engineering education community. This session is a follow-up to the National Science Foundation-funded Engineering Education Pioneers Project, which documented the stories of more than 40 engineering education pioneers through online profiles, https://depts.washington.edu/celtweb/pioneers-wp/.

M75529 - Free Time
1:00 pm - 1:45 pm
Exhibit Hall B & C Foyer, Convention Center
Take this time to relax, refresh, and catch up on emails! Then return ready to attend more of the exciting sessions the ASEE Annual Conference has to offer!

M75607 - ASEE Officer Feedback Session on the New BASS App
1:00 pm - 1:45 pm
Ballroom A, Convention Center
Feedback session on the new ASEE BASS App is open to ASEE Division, Council, Zone, Committee, and Commission officers.

M4854 - Student Division Technical 1: Diversity, Equity, Inclusivity (DEI)
1:45 pm - 3:15 pm
207, Convention Center
This technical session includes papers related to DEI (diversity, equity and inclusivity).

Student Perception of Virtual Collaboration Environments on Teaming Success in an Online Project-Based First-Year Engineering Design Course
Henry Axel Claesson
Robert Hodge
Eunsil Lee (Visiting Assistant Professor) (Virginia Polytechnic Institute and State University)
David Gray (Associate Professor of Practice)

Examining Engineering Education Research with American Indian and Alaska Native Populations: A Systematic Review Utilizing Tribal Critical Race Theory
Edward Tyler Young
David A. Delaine (Assistant Professor)

How Turkish Am I?: A 2nd-Generation Turkish-American Woman’s Identity Navigation Through Mechanical Engineering Education (Diversity)
Yagmur Onder (Undergraduate Researcher)

Paper: Lesson Learned -- Exploring Hermeneutic Injustice (diversity)
Yuliana Flores

Engineering Education in Support of Urban Gardening
Brenden Christopher Drinkard-mcfarland (The Ohio State University)
David A. Delaine (Assistant Professor)
Zachary Karl Smith (The Ohio State University)

Exploring the Influence of Students’ Perceptions of Course Assessment on Retention and Professional Identity Formation
Layla S Araiinejad (Auburn University)
Thomas Matthew Heaps (Utah State University)
M3647 - Virtual and Augmented Reality Applications in Manufacturing Education

1:45 pm - 3:15 pm
102D, Convention Center

Moderators: Richard Chiou (Associate Professor) (Drexel University), Yalcin Ertekin (Clinical Professor) (Drexel University), Irina Nicoleta Ciobanescu Husanu (Associate Professor) (Drexel University)

Exploring Virtual Reality for Student Learning Enhancement on Environmentally Sustainable Manufacturing with Renewable Energy
- Richard Chiou (Associate Professor) (Drexel University)
- Tzu-liang Bill Tseng (Professor and Chair) (University of Texas at El Paso)
- Michael G Mauk (Assistant Professor)
- Irina Nicoleta Ciobanescu Husanu (Associate Professor) (Drexel University)
- Tam Phi

Augmented Reality Integrated Welder Training for Mechanical Engineering Technology
- Hamid Eisazadeh
- Aditya Akundi (Assistant Professor)

Work-in-Progress: Developing an Interactive, Immersive, 360-Degree Virtual Media for Enhancing Student Learning in Additive Manufacturing
- Xiangxiong Kong (Assistant Professor of Engineering Science)
- Alex Fegely
- Wout De Backer (Assistant Professor) (University of South Carolina)
- Monica Gray (Associate Dean) (The University of Texas Permian Basin)
- George W Hitt (Associate Professor) (Coastal Carolina University)
- Ryan Kerns

Physically Contextualized Machining Instructions through Augmented Reality
- Emma Rose Higgason (Massachusetts Institute of Technology)
- Gabrielle Enns
- Joseph Wight

M3948 - Mechanical Engineering: DEI, Flipped Classrooms

1:45 pm - 3:15 pm
103B, Convention Center

Speaker: Hadas Ritz (Senior Lecturer)

Enhancing effectiveness and inclusivity of introductory ME courses: A cognitive psychology approach
- Fred Krynen
- Carl E Wieman
- Shima Salehi (Stanford University)

The Differing Impact of a New Assessment Framework on Student Success – The Effect of Socioeconomic Factors
- Michele J. Grimm (Wielenga Creative Engineering Endowed Professor) (Michigan State University)
- Ron Averill (Michigan State University)
- Geoffrey Recktenwald (Teaching Faculty)

EXAMINING THE IMPACT OF ONLINE LECTURE VIEWING BEHAVIOR ON STUDENT PERFORMANCE IN A FLIPPED CLASSROOM BLENDED COURSE
- Sudeshna Pal (University of Central Florida)
- Anchalee Ngampornchai
- Patsy Moskal (University of Central Florida)

Enhancing student learning in online courses through flipped classroom and multi-stage assignment structure
- Crystal Han

Flipped Online Learning with Synchronous Meetings in an Engineering Thermodynamics Course
- Randall D. Manteufel (Associate Professor) (The University of Texas at San Antonio)
- Amir Karimi

M4855 - Student Division Technical 2: Instruction & Learning Delivery

1:45 pm - 3:15 pm
209, Convention Center

Most papers in this section are related to learning delivery
What’s Happening at ABET in 2022 – 2023 ... an Information Session

1:45 pm - 3:15 pm
101C, Convention Center

This ABET-sponsored program will share current activities and news with engineering educators. If you are new to ABET accreditation or have programs that are seeking ABET accreditation for the first time - this session is for you. Topics include what types of programs are accredited, what the accreditation criteria and procedures are, who writes them, who serve as evaluators and how they are assigned to your program, who makes final accreditation decisions and how, how assessment tools are used and misused in the ABET process, and to whom ABET matters (and why). Come ready with your questions and feedback for senior ABET representatives.

Speakers: Joseph L. Sussman, Ph.D., F.ASME, Chief Accreditation Officer, Chief Information Officer, ABET

Jane Emmet, Senior Director, Accreditation Operations, ABET
Osama Mansour  
Shahnaz J. Aly (OAA, Leed AP) (Western Kentucky University)

**Understanding Student’s Perceptions of Cultural Dimensions in construction majors: Deconstructing barriers between architecture and civil engineering students**

- Miguelandres Guerra (Civil Engineering and Architecture)
- Homero Murzi (Assistant Professor)

The Future of Building Science Education with the U.S. Department of Energy Solar Decathlon

- Rachel L L Romero (Engineer and Project Leader)
- Michael Young
- Jessica Stershic
- Taylor Ryan

**M5649 - We Love our MOMs (Mechanics of Materials)**

1:45 pm - 3:15 pm  
101F, Convention Center

**Moderators: Shraddha Sangelkar (Assistant Professor), Ethan Hilton**

A look at enhancing the teaching of mechanics of materials by using service learning, project-based learning, and finite element analysis.

- **Strength-Based Projects in the Mechanics of Materials Course to Enhance Inclusivity and Engagement**
  - Sarira Motaref (Assistant Professor in residence)

- **A simplified instructional methodology for a Mechanics of Materials course with EFL students**
  - Adrian Rodriguez (Lecturer)

- **Achieving student outcomes with service-learning in Mechanics of Materials**
  - Adrian Rodriguez (Lecturer)

- **Work in Progress: Sustained Implementation of FEA in an Undergraduate Solid Mechanics Curriculum**
  - Reihaneh Jamshidi

- **Evaluating the Effects of Project-based Learning on a Sophomore Mechanics Course**
  - Casey Kidd (Graduate Assistant) (Louisiana Tech University)
  - Ethan Hilton

**Admissions Policies and Practices**

1:45 pm - 3:15 pm  
212, Convention Center

All students should have the opportunity to study engineering, but despite long-standing calls to increase diversity in undergraduate engineering education, most students are white men from upper middle-class families. However, some engineering schools have become better at predicting student success in engineering based on high school performance or personal traits (e.g., leadership skills, creativity) rather than standardized test scores, enabling students who would not normally be admitted to engineering programs to enroll and succeed. With support from the National Science Foundation, INSTITUTION is engaging the community in a collaborative process that highlights and shares effective admissions practices that improve diversity in engineering education. **M338 - Cooperative and Experiential Education Division Panel 1**

1:45 pm - 3:15 pm  
206, Convention Center

Have you ever considered US Department of Labor recognized apprenticeships to elevate your co-op experiences? Ever wonder how Labor and workforce policymakers as well as PK12 educators think about pathways? Through a design that extensively infuses employers’ needs, this session will infuse foundational information, interactive engagement with our panelists, and suggest action steps to advance your students’ experience through an apprenticeship.

- **Work-in-Progress: A Collaborative Model of Teaching and Learning for Undergraduate Innovation Education**
  - Jackson Otto (Graduate Student)
  - Greg J Strimel (Assistant Professor, Engineering/Technology Teacher Education) (Purdue University at West Lafayette (PPI))

**M3410 - International Division Technical Session 6: Monitoring, Evaluating and Research**

1:45 pm - 3:15 pm  
103C, Convention Center

**Moderator: Kirsten A. Davis (Assistant Professor)**
Subtheme: Monitoring, Evaluating and Research

Measuring Change in Students’ Development of Global Competency in Two Global Engineering Courses
Nicholas Dang
Kirsten A. Davis (Assistant Professor)
Brent K Jesiek (Associate Professor) (Purdue University at West Lafayette (COE))

Engineering Learning Community Introduction to Research Abroad A 5 year Assessment
Maria Claudia Alves (Senior Director, Halliburton Engineering Global Programs) (Texas A&M University)
Ahmarlay Myint (Program Specialist)
Zenon Medina-Cetina (Associate Professor) (Texas A&M University)
Sonia J Garcia (Assistant Dean for Undergraduate Diversity, Equity, and Inclusion) (University of Georgia)

Research on the Construction of Artificial Intelligence and Human Language Lab in China’s Universities: Progress, Challenges and Prospects
Xixi LU

A Case Study on Macroethics and Social Justice at the University of [BLINDED], Canada
Kathryn Johnson (Professor)

Evaluating the Transition to the Professoriate for International Graduate Students: Case Examples from an Iraqi-U.S. Program
Charles E. Pierce (Associate Professor, College of Engineering and Computing) (University of South Carolina)

or Technical Rigor with Diversity, Equity, Inclusion and Justice (DEIJ)

1:45 pm - 3:15 pm
M100J, Convention Center

Moderators: Anthony Battistini (Assistant Professor), Anuja Kamat (Dr.) (Wentworth Institute of Technology)

This important session includes papers that address how to incorporate DEIJ into the curriculum. Papers focus on both curricular and instructional practices that improve technical learning outcome achievement and classroom equity.

Redesigning Soil Mechanics as an Inclusive Course
Manish Roy (Assistant Professor in Residence) (University of Connecticut)
Connie Syharat (University of Connecticut)
Maria Chrysochoou (Professor and Department Head) (University of Connecticut)

Re-design of a Large Statics Course to Forster Creativity and Inclusion
Shinae Jang (Associate Professor in Residence, Director of Undergraduate Studies) (University of Connecticut)

To Do Good, Learn Well: Engineering a Virtuous Cycle between Technical Rigor and Diverse, Equitable, and Inclusive Teaching Practice
Gerald J. Wang (Assistant Professor) (Carnegie Mellon University)

Re-contextualizing Civil Engineering Education: A Systematic Review of the Literature
Kristen L. Sanford (Associate Professor)
Frederick Paige (Dr.) (Virginia Polytechnic Institute and State University)
Philip J. Parker (Acting Dean, College of Engineering) (University of Wisconsin - Platteville)
Rodolfo Valdes-vasquez (Associate Professor)
Peter Canevari (Lafayette College)
Timothy James Larsen (Lafayette College)
Elizabeth Diacik (Lafayette College)

Women Students Learning a STEM Subject: An Analysis of Note-Taking Practices in a Civil Engineering Course and the Association with Self-Efficacy, Cognitive Engagement, Test Anxiety, and Course Achievement
Monica Palomo (Professor)
Pauline Salim Muljana

M75553 - ASEE Journal Editors Roundtable Discussion: Future of Scholarship at ASEE

1:45 pm - 3:15 pm
Lakeshore C, Hyatt Regency

In this roundtable discussion, all Committee on Scholarly Publications members will be invited to discuss the future of scholarship at ASEE. For anyone who is interested in this topic and would like to provide input, please visit us at the Committee on Scholarly Publications booth in the exhibit hall.

M728 - Civil Engineering Division - Integration of Engineering and/
**M73292 - Safe Zone Ally Training - Level 2**

1:45 pm - 3:15 pm
Lakeshore A, Hyatt Regency

**Speakers: Mahesh Chand Aggarwal (Professor) (Gannon University), Bryce E. Hughes (Associate Professor)**

Safe Zone Workshops are interactive, research-informed workshops for students, faculty, and the professional community, during which participants will build the knowledge and skills needed to create a more inclusive and affirming environment for LGBTQIA+ individuals in engineering. The workshops have been developed by a community of science and engineering professionals and students, specifically for a STEM audience. Faculty, students, administrators, staff, and other professionals are encouraged to participate in these workshops. The Safe Zone Level 3 Trans Allyship workshop explores transgender-specific terms and concepts, the climate for trans individuals in society and in STEM and its broader implications, and action strategies for trans allies. ASEE Safe Zone Ally Training workshops are supported by the National Science Foundation through grants EEC-1539140 and EEC-1748499. To learn more and access free ally resources, please visit https://lgbtq.asee.org.

**M73297 - Engaging with Racialized Privilege in the STEM Classroom to Advance Equity**

1:45 pm - 3:15 pm
Lakeshore B, Hyatt Regency

**Moderator: Meagan Pollock**

**Speakers: Kelly J Cross (Assistant Professor), Elizabeth Litzler (Director) (University of Washington)**

This workshop will explore three case scenarios where U.S. cultural norms create an inequitable status quo, privileging whites and the concept of whiteness, while disenfranchising people of color, and offering undue privilege to other dominant identities. The workshop presenters will facilitate discussions and provide tools for self-reflection to allow attendees to disrupt and dismantle white privilege and other forms of racialized interactions common in the STEM education learning environment.

**M73373 - Data Utilization as a Bridge to Equity**

1:45 pm - 3:15 pm
Northstar A, Hyatt Regency

**Moderator: Richard R Harris (Associate Dean and Director) (Northeastern University)**

**Speakers: Alan Peterfreund (Executive Director), Joe Roy (Director of Institutional Research and Analytics), Jacqueline A. El-Sayed (Chief Academic Officer and Managing Director of Professional Services) (American Society for Engineering Education), Susan M Lord (Professor & Chair)**

Communities and teams focused on equitable systemic change in engineering education rely on data to collectively understand their opportunities and challenges, prioritize their efforts and capture the efficacy, efficiency and impact of those efforts. The “north star” of community data work is to connect specific educational change initiatives that promote engineering education among students in higher education to the broader impacts that may be measurable through local, state and national-level data. This work is being done in the context of the relatively intractable challenges that have been faced over the past several decades in making engineering more diverse, inclusive and equitable in general. Our session will begin with an interactive data walk. Equity walk and audience reflections. The second part will focus on a framework called CAPE - Capacity, Access, Participation and Experience. Data utilization will be illustrated in the third section with examples from Midfield and ASEE. Finally, participants will work in small group work focusing on key transition points for engineering students and gain exposure to accessible data set they can use for their own transformative equity work.

**M709 - Curricular Developments in Electrical and Computer Engineering**

1:45 pm - 3:15 pm
202, Convention Center

**Moderators: Seyed Mousavinezhad, Qudsia Tahmina (Assistant Professor)**

Curricular Developments in Electrical and Computer Engineering, ECE Division Technical Session 3

Statistical Analysis of an Adaptive Concept Inventory in Introductory Electric Circuits for Students and Instructors
2022 ASEE ANNUAL CONFERENCE
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2022 ASEE ANNUAL CONFERENCE
ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Teach an introductory computer engineering course with Multisim SPICE simulation
Alejandro H Espera
Nicole P. Pitterson (Assistant Professor) (Virginia Polytechnic Institute & State University)

Supporting Design Capabilities Across the ECE Curriculum, the Role of DAMNED Projects
Alan Cheville (Professor)

Neuromorphic VLSI design course
Anu Aggarwal

Adapting Chaos Theory for Undergraduate Electrical Engineers
Benjamin C. Flores (Professor) (University of Texas at El Paso)
Hector A. Ochoa (Associate Professor)
Chandra S. Pappu (Assistant Professor) (Union College)

Teaching Electronic Circuits with a Balance of Rigor, Intuition, Approximation, and Inspection Analysis
Chandrasekhar Radhakrishnan
Yuting W. Chen (Teaching Associate Professor)

M35457 - LEES Session 8
1:45 pm - 3:15 pm
101D, Convention Center
Moderator: David Tomblin (Director/Senior Lecturer) (University of Maryland College Park)
Speakers: Marie Stettler Kleine, Michelle Choi Ausman, Lauren Kuryloski (Assistant Professor of Teaching) (University at Buffalo, The State University of New York), Jennifer C Mallette (Associate Professor)

Diverse Perspectives, Engineering in Context, and Experiential Learning in Engineering Education
Lauren Kuryloski (Assistant Professor of Teaching) (University at Buffalo, The State University of New York)
Amy Baird

Centering Equity and Inclusion in Engineering Collaboration and Writing
Jennifer C Mallette (Associate Professor)

The Undone Ethics of Engineering Ethics
Michelle Choi Ausman
Dean Nieusma (Associate Professor and Director)
Qin Zhu (Assistant Professor) (Colorado School of Mines)

M5358 - WIED Session - Visit WIED Panel in Convention Center 212
1:45 pm - 3:15 pm
201, Convention Center
Join WIED

M92681 - Engineering Culture Roundtable
1:45 pm - 3:15 pm
Ballroom B, Convention Center
In the broad fields of engineering, do our attitudes and behavioral characteristics - our culture - best serve our core mission in engineering to solve problems for our world and for our society? In addition, do the practices and skills we develop in our students place greater importance on some information and lesser importance on others? Given the changing forces influencing our world and our society, should we revisit these practices and skills valuing and utilizing information? Should we revisit the design and optimization processes we follow so that our engineered solutions provide sustainable solutions? Roundtables will be facilitated to explore Strengths, Opportunities, Aspirations, and Results (SOAR) of our engineering culture. Ray McDermott noted in 2006, "culture is not a past cause to a current self. Culture is the current challenge to possible future selves.quot; Join these roundtable discussions to participate in defining our future selves.

M2841 - First-Year Programs Division Technical Session 1:
Student Success Boot Camps, Summer Bridge Programs, and Living Learning Communities

1:45 pm - 3:15 pm
101G, Convention Center

Moderators: Anna Newsome Holcomb (Lecturer), Aysa Galbraith (Teaching Associate Professor)

Development of A Bootcamp for Freshman Student Success During COVID-19 Transition
Noe Vargas Hernandez
Eleazar Marquez (Dr.) (The University of Texas Rio Grande Valley)
Arturo Fuentes

Summer Bridge Programming for Incoming First-Year Students at Three Public Urban Research Universities
Miriam Howland Cummings (Graduate Research Assistant)
Maryam Darbeheshti (Faculty) (University of Colorado Denver)
Stephanie S Ivey (Associate Dean for Research) (The University of Memphis)
Craig O. Stewart
David J. Russomanno (Dean) (Indiana University - Purdue University Indianapolis)
Danny King (Director, New Student Academic Advising Center) (Indiana University - Purdue University Indianapolis)
Katherine Goodman (Assistant Professor)
James T. Campbell (Professor) (The University of Memphis)
Tom Altman
Michael S. Jacobson

Examining the effectiveness of the Engineering Launch program for first-year engineering students
Yang Yang (Associate Professor)
Amy Rachel Betz (Professor) (Kansas State University)
Craig Spencer

Reimagining Summer Bridge: An Evolution in Best Practices to Support Incoming First-Year Engineering Students
Lauren A Griggs (Director, Multicultural Engineering Program, Assistant Teaching Faculty)
Carmen Mariana Vanderhoof (Pennsylvania State University)
Catherine L. Cohan (Assistant Research Professor)
Aaron Mattingly (Asst Director, Multicultural Engineering Program) (Pennsylvania State University)
Tonya Peeples

First-Year Engineering Living-Learning Communities Improve Four-Year Graduation Rates at a Small Private University
William John Palm (Associate Professor) (Roger Williams University)

M2942 - Graduate Studies Division Technical Session 1

1:45 pm - 3:15 pm
200C, Convention Center

A Systematic Literature Review of the Research on Gendered Socialization in Graduate Engineering Education
Sarah Grajdura
Kacey Beddoes (Project Director)

A Multi-Phasic Approach to Increase Diversity Among Doctoral Candidates in Biomedical Engineering
Lacy White (University of Texas at Austin)
Carly Eressy (University of Texas at Austin)

The Pitt STRIVE AGEP Program: Outcomes Towards Successful Completion of STEM Doctorates for Historically Underrepresented Students
Mary E. Besterfield-Sacre (Associate Dean and Professor)
Deanna Easley
Renee M Clark (Director of Assessment) (University of Pittsburgh)
Sylvanus N. Wosu (Associate Dean for Diversity Affairs) (University of Pittsburgh)
Drew G Yohe (Researcher) (University of Pittsburgh)

Work in Progress: A New Graduate Certificate to Broaden Participation in Computing
Yael Gertner (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)
Nancy M. Amato (Professor and Head) (University of Illinois at Urbana - Champaign)
Adrienne Gulley (University of Illinois at Urbana - Champaign)
Jancie Harris (Public Engagement Coordinator) (University of Illinois at Urbana - Champaign)
Mahesh Viswanathan (Professor) (University of Illinois at Urbana - Champaign)
Tiffani Williams

M30127 - Computers in Education 10 - Technology 2

1:45 pm - 3:15 pm
213, Convention Center

Moderator: Nebojsa Jaksic

This session will focus on technology innovations to enhance education.

Work in Progress: Design and Development of an Immersive Virtual Reality Educational Game for Wind Power Education

Robert Schaffer (Dr.)
Fadi Castronovo (Assistant Professor)
Osiriz Durana

Integrating Molecular Dynamics Simulation as a Tool for Helping Student Understanding of Fluid Flow Concepts

Baiou Shi
Siddharth Ravi
Dan Fenner (Chemistry Teacher Maplewood Jr/Sr High School)

Work-in-Progress: SimCoast: Promoting Awareness of Coastal Recession via Gaming

Jose Lopez (University of Florida)
Thiago Matheus de Andrade Bezerra (University of Florida)
Dalton J Cravens (University of Florida)
Jeremiah J Blanchard (Assistant Instructional Professor)

Controlling a Robotic Arm with an ELVIS II

Kenny Fotouhi
Mahdi Fotouhi
Abhijit Nagchaudhuri (Professor)

M3245 - Instrumentation Division Technical Session 1

1:45 pm - 3:15 pm
102A, Convention Center

Papers in this session present various instrumentation devices, tools, and software for use in classrooms and laboratories to solve challenging instrumentation problems. Topics include measurement methods, laboratory data collection automation, applying microcontroller hardware to instrumentation problems, and adapting results to classroom discussion of these issues.

A Tool Suite for Automation Labs
Bradley Kicklighter

A Conductivity Measurement Tool for Aluminum Components

Cyril B Okhio (Engineering Professor)
Austin B. Asgill (Professor) (Kennesaw State University)
Lakshmi Bhargavi Tripuraneni (Kennesaw State University)

Embedded Systems using the Raspberry Pi Pico

David R. Loker (Chair, Electrical and Computer Technology) (Pennsylvania State University, Behrend College)

Integration of Active Learning Framework in an Instrumentation Course to involve Junior Level Engineering Students in Multidisciplinary Research Projects

Abhijit Nagchaudhuri (Professor)
Jesu Raj Pandya (Mr.) (University of Maryland Eastern Shore)
Isaac Omodia (University of Maryland Eastern Shore)
Charles Raleigh (University of Maryland Eastern Shore)
Kenny Fotouhi

Water Analysis Quadcopter Platform Development for Mosquito Research via Capstone project

Byul Hur (Assistant Professor)
Carter B. Wheat (Texas A&m;M University)

M225 - Aerospace Division Technical Session: Student Success

1:45 pm - 3:15 pm
203, Convention Center

The Impact of Socioeconomic Status on Student Performance and Persistence in an Aerospace Engineering Curriculum

Kathryn Anne Wingate (Instructor)
Aaron W. Johnson (Assistant Professor)
Kayla Brooks

The Impact of Strategies for Effective Engagement on Student Success Before and During COVID-19

Chadia A. Aji
M. Javed Khan (Department Head)

Outreach Projects to Broaden STEM Participation: Designed by Undergraduate Students at an Aerospace Engineering REU Site

Benjamin Ahn (Associate Professor)
MacKenzie Ann Reber (Miss)

Identifying the Challenges Aerospace Engineers Face During the Transition from University to Industry

MacKenzie Ann Reber (Miss)
M25711 - Entrepreneurship & Engineering Innovation Division Technical Session 2

1:45 pm - 3:15 pm
200F, Convention Center

Moderator: Sunay Palsole (Assistant Vice Chancellor for Engineering Remote Education) (Texas A&M University)

Preparing Instructors to Encourage an Entrepreneurial Mindset
- Meagan Eleanor Ita (Post-Doctoral Scholar)
- Laine Rumreich (The Ohio State University)
- Krista M Kecskemety (Associate Professor of Practice)
- Rachel Louis Kajfez (Assistant Professor)

Work-In-Progress: Facilitating Engineering Students’ Entrepreneurship Through Self-Regulated Learning Instructions
- Ying Wang (Postdoctoral Fellow)
- Joy Harris
- Janece Shaffer

Addressing Convergent Problems with Entrepreneurially-Minded Learning
- Stu Thompson (Associate Professor and Department Chair) (Bucknell University)
- Alan Cheville (Professor)
- Jason Forsyth (Associate Professor of Engineering)

The Importance of Research in Student Formation
- Kenneth W. Van Treuren (Professor and Associate Dean for Research and Faculty Development)
- Cynthia C. Fry (Senior Lecturer) (Baylor University)
- Bradley R Norris

Insights Provided by Student Feedback on Integrated E-Learning Modules Covering Entrepreneurial Topics
- Maria-isabel Carnasciali (Associate Professor)
- Nadiye O. Erdil (Associate Professor)
- Ronald S Harichandran (Dean) (University of New Haven)
- Jean Nocito-gobel (Professor) (University of New Haven)

M39276 - Mechanical Engineering: Fluids, Heat Transfer

1:45 pm - 3:15 pm
Minnehaha, Hyatt Regency

Speaker: Shengyong Zhang (Associate Professor of Mechanical Engineering)

Assessing authentic problem-solving in heat transfer
- Jiamin Zhang (Auburn University)
- Soheil Fatehiboroujeni
- Matthew Ford
- Eric Burkholder (Postdoctoral Scholar)

The Hydrostatic Vacuum Tube: a Low-Cost Thermal Fluid Science Laboratory
- Aaron Drent
- Phillip Cornwell (Professor Emeritus)
- George Sidebotham (The Cooper Union)

Design of a Wind Tunnel: A Student Project to Design and Build Their Own Wind Tunnels as the Culmination of Fluid Mechanics Laboratory
- Charles L. Keesee (Assistant Professor)
- Cherish Bauer-Reich

LearnPIV: An Interactive, Web-Based Learning Tool for Particle Image Velocimetry Basics
- Jack Elliott (Graduate Research Assistant)
- Angela Minichiello (Assistant Professor)
- Kevin Jay Roberts (Research Assistant)

Introducing Data Analytics into Mechanical Engineering Curriculum
- Xiyuan Liu (Assistant Teaching Professor) (Syracuse University)

M40 - Experimentation and Laboratory-Oriented Studies Division Technical Session 1: Experiential Learning in Fluids, Structures, and Course/Lab
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**Design**

1:45 pm - 3:15 pm
102F, Convention Center

**Moderator: Robby Sanders (Associate Professor)**

In this session, the development and implementation of hands-on experiences in a thermal-fluids lab, engineering and engineering technology programs, and classes on structures and statics will be shared as will strategies towards the development of a community of practice.

Remote Laboratory-Based Learning in A Thermal Fluid Course

Nael Barakat (Professor and Chair) (The University of Texas at Tyler)
Mohammad Abu Rafe Biswas (Associate Professor)
Ola Al-shalash

Hands-on approach to Fluid Dynamics by using industrial fluid-power trainers for Engineering Students

Nelson A. Granda Marulanda (Assistant Professor)
Joseph Tang (Assistant Professor) (Western Carolina University)
Tom Spendlove

A SIMPLE EXPERIMENT IN STRUCTURAL VIBRATIONS FOR CIVIL ENGINEERING STUDENTS

Farhad Reza

A Sequence of Laboratories for Beginning Statics Classes

Jim Sizemore (Professor) (Mesa Community College)

Development of a Community of Practice for Rethinking Best Practices in Post-COVID Experiential Learning

Rebecca Marie Reck (Teaching Associate Professor)
Katherine Ansell (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)
Jessica R TerBush (Lecturer) (University of Illinois at Urbana - Champaign)
Christopher D. Schmitz (Teaching Professor and Chief Undergraduate Advisor)
John Popovics
Holly M Golecki (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

210, Convention Center

**Moderators: Olgha Bassam Qaqish (Associate Director of the Engineering Grand Challenges Scholars Program), Rea Lavi (Dr.)**

What is Cool Stuff? Exploring Engineering Students’ Motivation to Be Excited About Their School Activities

Thomas Machamer (South Dakota School of Mines and Technology)
Micah Lande (Assistant Professor)

A Pedagogical Framework for Understanding the Alignment Between Classroom Project Evaluations and Real-World Industry Requirements

Mayank Kejriwal (Research Assistant Professor) (University of Southern California)

Decreasing Student Stress Through Multi-Attempt Digital Engineering Assessments with Rotating Questions

Duncan Davis (Associate Teaching Professor)
Ciana Winston

Industry Assessment of Multidisciplinary Teamwork Skills

Illysa Izenberg (Senior Lecturer) (The Johns Hopkins University)
Steven P Marra (Associate Teaching Professor) (The Johns Hopkins University)
Trevor Mackesey
Leslie L. Kendrick
Jenny Bernstein (Lecturer) (The Johns Hopkins University)

**M431 - IEEE Education Society Board of Governors Meeting**

1:45 pm - 3:15 pm
M100B, Convention Center

IEEE Education Society Board of Governors Meeting
This is a 3 hour meeting, meeting time requested is Monday 1:00 - 4:00 PM

**M45469 - CEMAL Business Meeting**

1:45 pm - 3:15 pm
Nicollet D2/D3, Hyatt Regency

CEMAL Business Meeting
M944 - CIT Division Technical Session #5
1:45 pm - 3:15 pm
M101C, Convention Center
Moderator: Mandy Barrett Korpusik (Assistant Professor)
Speakers: Mohammad Rafiq Muqri (Professor CEIS) (DeVry University, Pomona), Jose Alejandro Cabrera (University of Florida), Sarah Rajkumari Jayasekaran (Lecturer)


Leveraging the power of Python, Octave and Matlab for Machine Learning
Mohammad Rafiq Muqri (Professor CEIS) (DeVry University, Pomona)
Seta Boghikian-Whitby (Professor and Department Chairperson)
Muiz Muqri (University of Southern California)
Zacki Muqri (University of Southern California)
Sarah Muqri (University of California, Riverside)

Can Natural Language Acquisition Theory Inform How Students Learn To Program?
Jose Alejandro Cabrera (University of Florida)
Ashish Aggarwal

Impact of Late Policies on Submission Behavior and Grades in Computer Programming
Mandy Barrett Korpusik (Assistant Professor)
Jordan Freitas (Assistant Professor) (Loyola Marymount University)
John David N Dionisio (Loyola Marymount University)

Relationship of Students’ Engagement with Learning Management System and their Performance- An Undergraduate Programming Course Perspective
Sarah Rajkumari Jayasekaran (Lecturer)
Saira Anwar (Texas & M, Department of Multidisciplinary Engineering)
Kwansun Cho (Instructional Assistant Professor)
Syeda Fizza Ali

M15287 - FIE Steering Committee: Executive Session
1:45 pm - 3:15 pm
M100D, Convention Center
Moderators: P.K. Imbrie (Head and Professor, Department of Engineering Education), Homero Murzi (Assistant Professor), Rachel Louis Kajfez (Assistant Professor)

Closed business meeting for the Executive Committee of the FIE Steering Committee.

M10129 - Construction Engineering Division Technical Session 3
1:45 pm - 3:15 pm
102B, Convention Center
Moderators: Boshra Karimi (Dr.) (Northern Kentucky University), Luciana Deb (Purdue University Programs)

An Organizational Review of CIP Code Designations for Construction Science, Technology, Engineering, and Management Programs and Curriculum
Yilmaz Hatipkarasulu (AssociateProfessor) (The University of Texas at San Antonio)
Guntulu S Hatipkarasulu

COVID-19 Effects on Construction Industry
Boshra Karimi (Dr.) (Northern Kentucky University)
Mahdi Yazdanpour (Dr.) (Northern Kentucky University)
Sean P. Foley (Northern Kentucky University)

Student Perceptions about Marijuana Use in the Construction Industry
Behnam Shadravan (Assistant Professor)

An Innovative Teaching Model: Involvement of Industry Practitioners in the Teaching of Construction Management Curriculum
Renxiang Lu (University of Wyoming)
Francois Jacobs (Associate Professor) (University of Wyoming)

Safety as a Part of Construction Means and Methods: A Complimentary Teaching and Learning Approach for Occupational Safety
Yilmaz Hatipkarasulu (Associate Professor) (The University of Texas at San Antonio)

Core Curriculum Participation of Architecture, Engineering,
and Construction Programs
Yilmaz Hatipkarasulu (Associate Professor) (The University of Texas at San Antonio)

M1533 - ERM: Student Professional Development: Professional Skills and Moving Beyond the Classroom

1:45 pm - 3:15 pm
200J, Convention Center

Moderators: Joni Lakin (Associate Professor) (The University of Alabama), Andrea Gregg (Director of Online Pedagogy) (Pennsylvania State University)

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This session speaks to helping students develop professional skill beyond just technical knowledge and in spaces beyond the classroom.

Operationalizing the orthogonal role of a Learning Assistant in the classroom to analyze epistemological development
Laura Rios (California Polytechnic State University, San Luis Obispo)
Benjamin Lutz

Designing the Engineers Without Borders USA Professional Preparation Study Surveys
Paul A. Leidig
Eric Holloway (Sr Director - Industry Research) (Purdue University at West Lafayette (COE))
William C. Oakes (Director and Professor)

WIP: Think-Aloud Interviews for Assessment of Engineering Students’ Opportunities to Practice Professional Skills
Tiantian Li
Victoria Bill (MakerSpace Director)
Eric Holloway (Sr Director - Industry Research) (Purdue University at West Lafayette (COE))
Kerrie A Douglas (Assistant Professor of Engineering Education)
Julie Martin

Critical Review and Refinement of a Professional Development Survey for Engineering Undergraduates, Toward an Integrated Tool for Reflection Across the Curriculum
Bahar Memarian (Postdoctoral Researcher)
Andrew Olewnik (Assistant Professor)

“Where could this take me and what kind of interesting stuff could I do with that?” The role of curiosity in undergraduate learning
Natalie Evans (University of Virginia)
Jamie J Jirout (University of Virginia)
Jessica Scoville (University of Virginia)
Caitlin Donahue Wylie (Assistant Professor) (University of Virginia)
Elizabeth Opila (University of Virginia)

Investigating Factors that Inform Engineering Students’ Choice of Extracurricular Activities
Beata Johnson (PhD Student)
Joyce B. Main (Associate Professor) (Purdue University at West Lafayette (COE))

M84237 - Engineering Physics and Physics Division Technical Session 2

1:45 pm - 3:15 pm
103A, Convention Center

Moderators: Harold T. Evensen (Professor of Engineering Physics), Tooran Emami (Associate Professor)

Women in the Physics and STEM Pipelines: Recruiting, Retaining, and Returning in the Aftermath of a Global Pandemic
Shams El-Adawy
Victoria Vogel (American University)
Teresa L. Larkin (Associate Professor of Physics Education)

Integrating Race, Gender, and Indigenous Knowledge in the Introductory Physics Curriculum
Eswara Prasad Venugopal (Associate Professor of Physics)

Plasma antennas for the undergraduate student
Paul Benjamin Crilly (Professor)

The Myowearable Sleeve: A Surface Electromyography
Injury Prevention Device
Bala Maheswaran (Professor)
Sakib Azgar (Northeastern University)
Kaitlyn Ramesh (Northeastern University)
Ted Yee (Northeastern University)
Ananya Tadigadapa (Northeastern University)
Violet Manxhari (Northeastern University)

Development and Assessment of an Introductory Undergraduate Course in Biophysics
Tanja Greene

M15673 - ERM: Mentoring for Everyone! And Let’s talk about Graduate Students
1:45 pm - 3:15 pm
101E, Convention Center

Moderators: Dina Verdin (Assistant Professor), Kanembe Shanachilubwa
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This session has some great papers about mentoring as well as papers that focus specifically on graduate students. I know I’m excited to learn more!

Using Observational Learning Theory to Interpret How Engineering and Computer Science Faculty Learn to Mentor Postdoctoral Scholars
Matthew Bahnson
Catherine Berdanier
Monique S. Ross (Assistant Professor) (Florida International University)

Use of Communities of Practice to Analyze and Improve Graduate Engineering Education.
Brayan Alexander Diaz (North Carolina State University at Raleigh)
Collin F. Lynch (Assistant Professor of Computer Science) (North Carolina State University at Raleigh)

Unpacking Engineering Doctoral Students’ Career Goal Setting and Future Time Perspectives
Derrick James Satterfield (Doctoral Candidate) (University of Nevada, Reno)
Mackenzie C. Parker (University of Nevada, Reno)
Matthew Bahnson
Heather Perkins

M85453 - ETD - ET Curriculum and Programs I
1:45 pm - 3:15 pm
205B, Convention Center

Curriculum (Course and Lab) innovation and development
Current issues in ET and integration of those into ET curriculums (IoT, Industry 4.0, globalization, sustainability, ethics, alternative energy, etc.)
Integrating NAE Grand Challenges for Engineering into ET education
ET Pedagogical advancements and issues
Developing interest and recruiting students into ET programs
ETAC of ABET Accreditation strategies – assessment, evaluation, improvement
Balancing theory and practical application in ET curriculums
Capstone course implementation (concerns, issues, methods, use for assessment, etc.)
Integration of computer simulation methods in ET education
Collaboration with industry
Student success (mentoring, tutoring, advising, etc.)
Applied research and Integration of research into ET
curriculums
- Undergraduate research opportunities and accomplishments in ET education
- ET Faculty career and continuing professional development
- Diversity in ET programs

A Highly Integrated and Successful Approach to Program Development and Implementation of Accreditation Strategies for an Engineering Technology Program
Ashis Nandy (Associate Professor)

Choose Ohio First – IMProving REtention and Student Success in Computing (COF-IMPRESS-C) – Second Year Progress Report
Nasser Alaraje (Professor and Chair)

The Impact of the Industrial Advisory Board on the Governance of Engineering Technology Programs
Kathryn Kelley (Executive Director)
Camryn E Reitz (Undergraduate Student Researcher) (The Ohio State University)
Winifred Opoku (The Ohio State University)

An Analysis of Student Retention Efforts in Engineering Technology Programs
Gloria Margarita Fragoso-diaz (Associate Professor)
Billy Gray (Tarleton State University)

M91216 - DEED Technical Session
10: Empathy and Human-centered Design
1:45 pm - 3:15 pm
101J, Convention Center
Moderator: Beshoy Morkos (Associate Professor)

Expansive Empathy: Defining and Measuring a New Construct in Engineering Design
Ardeshir Raihanian Mashhadi (University at Buffalo, The State University of New York)
Vanessa Svihla

Promoting Human-Centered Mindsets and Practices in STEM: Insights from a Capstone Course on 3D Printing Prosthetic Devices
Johanna Okerlund (University of North Carolina at Charlotte)
David Wilson
Celine Latulipe (University of Manitoba)

Considerations for the Use of Personas and Journey Maps in Engineering Course Design
Nicholas D. Fila (Research Assistant Professor) (Iowa State University of Science and Technology)
Diane T. Rover (University Professor) (Iowa State University of Science and Technology)
Mani Mina (Iowa State University of Science and Technology)

Work in progress: Using Community-Based Participatory Design and a Context Canvas to design engineering design courses.
Imane Aboutajedyne (Ph.D. researcher)
Shawn S. Jordan (Associate Professor) (Arizona State University, Polytechnic Campus)
Ahmed Aboutajeddine

Exploring engineering students’ reflections of their childhood experiences: The intersection of structure and curiosity
Collette Patricia Higgins (James Madison University)
Melissa Aleman
Robert L. Nagel

M77267 - Exploring Alternative Grading Strategies
1:45 pm - 3:15 pm
Nicollet D1, Hyatt Regency
Moderators: Brian Helmke, David O’apos;Neill, Casey Jane Ankeny (Associate Professor of Instruction) (Northwestern University)

Does grading create stress and anxiety for your students? Do they wish it didn’t exist? Do you wish it didn’t exist? Grading is a form of evaluative feedback that judges students’ work but often does not constructively inform the learning process or students’ future efforts. Grading also tends to enhance extrinsic motivation and reduce self-efficacy, especially among members of underrepresented groups or students who do not feel a sense of belonging. Alternative grading strategies are based on success criteria tied to learning objectives and include flexible timing, which may support justice, equity, and inclusion. By the end of this collaborative workshop, you will be able to (1) identify current trends and best practices in alternative grading, (2) consider how alternative grading strategies support justice, equity, and inclusion, and (3) begin to envision how to implement an alternative grading strategy in your course.
M17372 - Field Trip to the Center for Microgrid Research at the University of St. Thomas

1:45 pm - 3:30 pm

Microgrid at the University of St. Thomas; School of Engineering, 2115 Summit Ave. OSS, 100 Saint Paul Minnesota

This is a ticketed session. To add this ticket to your registration, please click the button below. Participants will visit the Center for Microgrid Research at the University of St. Thomas in nearby St. Paul, MN. The Center for Microgrid Research is dedicated to improving the reliability and resiliency of our electric grid. Through their educational programs, research, and partnerships, the Center is building the human and operational capacity needed for the 21st century grid. Bus transportation to the University of St. Thomas campus is provided.

M18419 - EDC Public Policy Committee Meeting

1:45 pm - 3:15 pm

L100A, Convention Center

EDC Public Policy Committee Meeting

M18476 - EDC Diversity, Equity, & Inclusion Committee Meeting (Deans Only)

1:45 pm - 3:15 pm

L100B, Convention Center

M22437 - Engineering Libraries Division Technical Session 3: Technology

1:45 pm - 3:15 pm

101I, Convention Center

Moderator: Zachary Painter (Engineering Librarian, Research & Teaching Support) (Stanford University)

Speakers: Paul McMonigle (Engineering Instruction Librarian) (Pennsylvania State University), Ryan Barlow (Lead Content Author - Mechanical Engineering), Oscar Rios (Engineering Content Developer) (zyBooks, A Wiley Brand), James Eakins (zyBooks, A Wiley Brand), Amy Kurr, David J. Icove (Professor of Practice) (University of Tennessee at Knoxville)

Engaging Engineering Students with Mobile Learning Technologies

Paul McMonigle (Engineering Instruction Librarian) (Pennsylvania State University)

Standards In Science and Engineering Education

Amy Kurr

David J. Icove (Professor of Practice) (University of Tennessee at Knoxville)

High-Quality Text Descriptions of Visual Elements in Online Interactive Versions of Traditional Print Mechanical Engineering Textbooks

Adrian Rodriguez (Lecturer)

Oscar Rios (Engineering Content Developer) (zyBooks, A Wiley Brand)

Ryan Barlow (Lead Content Author - Mechanical Engineering)

James Eakins (zyBooks, A Wiley Brand)

M57 - Technological and Engineering Literacy/Philosophy of Engineering Division Technical Session 1

1:45 pm - 3:15 pm

205C, Convention Center

Title: Work in Progress: Gamification of education: Using Bartle’s Taxonomy for inclusive educational practices

Lizabeth L Thompson (Professor)

Defining Engineering Education Research: The Elevator Pitch

Jeffrey Wayne Paul

Renato Alan Bezerra Rodrigues

Nikita Dawe

Sherry-Ann Ram (Ms) (University of Toronto)

Nicholas James Rupar

Mandeep Raj Pandey (University of Calgary)

Robyn Paul (PhD Student) (University of Calgary)

Victoria Thomesen (University of Manitoba)

Reed Forrest (University of Manitoba)

Jillian Seniuk Cicek (Assistant Professor) (University of Manitoba)

Toward Diversifying Computer Science With Novel Interest-
Based Models of Students
Joshua Gross
Keyoni McNair

Enhancing the Student Learning Experience through Virtual Reality Integration
James Schreiner (United States Military Academy)
Leang Tri

An Approach for Engineering Curriculum Revision to Increase Coverage of Non-Technical Subjects
John R. Reisel (Professor) (University of Wisconsin - Milwaukee)

Effectiveness of Research and Practice on the Improvement of Scientific Literacy Based on Extra-curricular Learning —— A case of a certain Engineering College in China
Banglong Liang
Haojing Chang

M594 - SPONSOR TECH SESSION: Presented by the University of Minnesota Duluth
1:45 pm - 3:15 pm
101A, Convention Center

M598 - SPONSOR TECH SESSION: Edge Machine Learning in the Classroom - Presented by Edge Impulse
1:45 pm - 3:15 pm
101B, Convention Center

Speaker: Shawn Hymel (Senior DevRel Engineer) (Edge Impulse)

This is a ticketed session. To add this ticket to your registration, please click the button below. Presenter: Shawn Hymel (Senior DevRel Engineer, Edge Impulse) Description: Machine learning is a fast-growing field, and recent advances in hardware and software make it possible to run many deep learning algorithms on embedded systems. As a result, machine learning is expanding beyond just advanced computer science curriculum and into physical devices to help solve unique problems in medicine, agriculture, industrial maintenance, and consumer electronics. This session will provide a hands-on demonstration of Edge Impulse, the leading edge machine learning studio that helps you collect and analyze data, train machine learning algorithms, and deploy them to a variety of embedded systems. We will also discuss how edge machine learning can be integrated into curriculum and ask attendees for feedback on how Edge Impulse can be improved as a teaching tool.

M61 - Equity, Culture & Social Justice in Education Division Technical Session 1
1:45 pm - 3:15 pm
205A, Convention Center

Moderator: Baishakhi Bose

Nurturing Social Sustainability Within our Future Workforces
Piyush Pradhananga
Mohamed Elzomor (Assistant Professor) (Florida International University)

Empathy as Key to Inclusivity in Engineering Education
Jan Fertig
Subha K Kumpaty (Associate Professor) (Milwaukee School of Engineering)

A Third University is Possible? A Collaborative Inquiry within Engineering Education
Joseph Valle (Michigan State University)
Donna M Riley (Kamyar Haghighi Head, School of Engineering Education) (Purdue University at West Lafayette (COE))

Your Voice is Power: Integrating Computing, Music, Entrepreneurship, and Social Justice Learning
Roxanne Moore
Sabrina Grossman
Joycelyn Wilson (Georgia Institute of Technology)
Chalece Arial Delacoudray (Georgia Institute of Technology)
Hilah Barbot (Sr. Product Engineer) (Amazon Web Services)
Sunni Newton
Meltem Alemdar (Georgia Institute of Technology)
Stephen Garrett (Georgia Institute of Technology)
Jason Freeman

Invention Education: Positioning Youth as Agents of Change
Adam Talamantes (Program Coordinator)
Susan Rowe M Rowe (Director of Precollege Programs)
Renee O#39;Neill (Oregon State University)
**M6210 - Pedagogy in Chemical Engineering Education**

**1:45 pm - 3:15 pm**

200E, Convention Center

**Importance of Feedback in Introductory Thermodynamics: A Trial Case in Flipped Classroom Instruction**

Stuart Adler (Prof)

**Assessing Embedded Process Safety Curriculum Within Core Chemical Engineering Courses**

Laura Hirshfield (Lecturer)

**An Undergraduate Research Methods Class: Results and Experiences from Initial offerings**

Joseph H Holles (Professor)

Lori Ann Howe (Assistant Instr. Professor, Honors College) (University of Wyoming)

**Doing Design Differently: Hybrid Teaching in the age of Covid-19**

Daryl Williams (Professor)

Paul Frederick Luckham (Prof)

Colin Paul Hale (Senior Teaching Fellow)

Deesha Chadha

**How We Teach: Material and Energy Balances**

Laura P Ford (Associate Professor) (The University of Tulsa)

Janie Brennan (Senior Lecturer)

Jennifer Cole (Assistant Chair and Lecturer)

Kevin D. Dahm (Professor of Chemical Engineering)

Luke Landherr

David L. Silverstein (Director) (University of Kentucky)

Bruce K Vaughan (Lead Process Safety Subject Matter Expert) (American Institute of Chemical Engineers)

Christy Wheeler West (Associate Professor) (University of South Alabama)

**Animation Analytics in an Interactive Textbook for Material and Energy Balances**

Matthew W Liberatore (Professor of Chemical Engineering, Interactive textbook author)

**M9131 - DEED Technical Session 1: Adapting to COVID and other Design Challenges**

**1:45 pm - 3:15 pm**

101H, Convention Center

**Moderator: Emelia Delaney**

**Industry Hubs: Integrating Industry Perspectives in Design Education**

Christopher Rennick (Engineering Educational Developer)

Eugene Li (Mechatronics Engineer in Training) (University of Waterloo)

Michael Lenover (University of Waterloo)

Wesley Blankespoor

Sanjeev Bedi (Professor and Director) (University of Waterloo)

**Innovating Through a Pandemic: Zooming in on the Sustainable Lessons Learned in Engineering Education**

David John Orser (Distinguished University Teaching Professor) (University of Minnesota - Twin Cities)

Lorraine Francis (Professor) (University of Minnesota - Twin Cities)

John Sartori

Kyle Dukart (Administrative Manager) (University of Minnesota - Twin Cities)

Brody Hultman (University of Minnesota - Twin Cities)

Lauren Linderman (University of Minnesota - Twin Cities)

R Lee Penn (Professor) (University of Minnesota - Twin Cities)

**A Silver Lining: Engineering Senior Capstone Projects During Pandemic**

Nebojsa Jaksic

**Enduring Pandemic Impacts on Capstone Course**

Heather Orser

Tiffany Ling (Design Clinic Lead) (University of St. Thomas)

**M85710 - ETD Technical Session 5 - ET Curriculum and Programs II**

**1:45 pm - 3:15 pm**

205D, Convention Center
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**Experiences during the implementation of two different project-based learning assignments in a fluid mechanics course**

- Orlando M Ayala (Associate Professor)
- Kristie Gutierrez (Assistant Professor of Science Education) (Old Dominion University)
- Francisco Cima
- Julia Noginova
- Min Jung Lee (Old Dominion University)
- Stacie I Ringleb (Professor) (Old Dominion University)
- Pilar Pazos (Associate Professor) (Old Dominion University)
- Krishnanand Kaipa (Assistant Professor) (Old Dominion University)
- Jennifer Jill Kidd (Dr.)

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**Modular Hydrostatic Vehicle used for Engineering Technology**

- Israa Azzam (Graduate Student ) (Purdue University at West Lafayette (COE))
- Keith S. Pate (Student) (Purdue University at West Lafayette (PPI))
- Farid Breidi (Dr.) (Purdue University at West Lafayette (PPI))
- Walker Murphy (Purdue University at West Lafayette (PPI))
- Jose Garcia

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**Students Perceptions on the Use of AutoCAD Activities in Courses of the Mining Engineering Program**

- Miguel Angel Arriagada (Chemical Engineer) (Universidad Andres Bello)
- Genaro Zavala (Professor)

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**Combining Problem-Based Learning with the KEEN ’s Framework for Entrepreneurially Minded Learning in a Fluid Mechanics Course: Pilot Implementation**

- Carmen Cioc (Associate Professor)
- Noela A. Haughton (Dr.) (The University of Toledo)
- Sorin Cioc

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**M27266 - De-marginalizing Issues of Equity, Culture, and Social Justice in Faculty Formation**

1:45 pm - 3:15 pm

**Greenway CDE, Hyatt Regency**

**Speakers:** Homero Murzi (Assistant Professor), Avneet Hira (Assistant Professor) (Boston College), James Holly, Jr. (Assistant Professor)

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**M2760 - Faculty Development Division Technical Session 1**

1:45 pm - 3:15 pm

**200G, Convention Center**

**Moderator:** Juan M Cruz (Rowan University)

**Speaker:** Homero Murzi (Assistant Professor)

**Work In Progress - KEEN Faculty Impact Study**

- Darby Rose Riley
- Cayla Ritz
- Cheryl A Bodnar (Associate Professor, Experiential Engineering Education)
- Kaitlin Mallouk (Assistant Professor)

**A Faculty Learning Community for Building Sustainable Open Educational Resources: Creating a Departmental Video Tutorial Library**

- Paul Morrow Nissenson (Professor)
- Faye Linda Wachs (Professor) (California State Polytechnic University, Pomona)
- Juliana Lynn Fuqua (Associate Professor)
- Cecilia Nguyen (Ms.) (California State Polytechnic University, Pomona)
- Deanna Miranda Barrios (California State University, Fullerton)
- Natalia Villa Perez (California State Polytechnic University, Pomona)

**WIP: Faculty Adoption of Active Learning in Online Environments: An Application of the Concerns-Based Adoption Model**

- Xiaping Li
- Maartje E. D. Van Den Bogaard (Research Fellow)
- Lea K. Marlor (University of Michigan)
- Laura Carroll (University of Michigan)
- Cynthia J. Finelli (Professor)

**A Collaborative Autoethnography: Examining Professional Formation and Workplace Sustainability in Discipline-based Engineering Education Research**

- Madeline Polmear (Dr.)
- Denise Rutledge Simmons (Associate Professor) (University of Florida)

**Integrating Teacher Empathy into the Engineering Classroom one Educator at a Time: An Action Research Study**

- Bala Vignesh Sundaram (Mr)
- Nadia N. Kellam (Associate Professor)
M11130 - CPDD Technical Session 2 - Trends in Student and Faculty Support

3:30 pm - 5:00 pm
200B, Convention Center

Moderator: Marty Ronning (Director, Instructional Technologies) (University of Maryland College Park)

This session will focus on addressing career and curricula development support for faculty and instructors, as well as some of the needs and characteristics of students in professional development programs.

Academic Job Preparation for Underrepresented STEM Dissertators, Postdoctoral Researchers, and Early Career Faculty: Contributions to an Institutional Partnership Model for Promoting Diversification of the Professoriate

- Mehrube Mehrubeoglu (Professor) (Texas A&M University - Corpus Christi)
- Kimberle Ann Kelly (Independent Consultant)
- Shannon Walton (Assistant Dean)
- Rasheedah Richardson (Associate Director) (Texas A&M University)
- Karen L. Butler-purry (Assoc Prov for Graduate Studies) (Texas A&M University)
- Scott A King (Texas A&M University - Corpus Christi)

Training the Trainers: Preparing Facilitators to Provide Professional Development for Engineers and Scientists

- Astri Briliyanti
- Julie Rojewski (Program Manager, BEST Program) (Michigan State University)
- Dirk Joel-luchini Colbry (Research Specilest) (Michigan State University)
- Kathleen Luchini Colbry (Assistant Dean, Engineering Graduate Student Services)

Comparison of Advising Needs for Returners and Direct-Pathway Students in Master’s Programs in Engineering

- Diane L Peters (Associate Professor)
- Elizabeth Gross (Assistant Professor) (Sam Houston State University)

Analysis of academic performance in continuing education programs: An evaluation of synchronous and asynchronous online platform usage

- Veronica Jara-Troncoso (Universidad Andres Bello)
- Cristian Saavedra-acuna (Professor)
- Monica Quezada-Espinoza

Will They Come? – Understanding the Student Demographics of a First of its Kind Doctor of Technology Online Program in a Tier-1 University

Mitchell L Springer (Executive Director) (Purdue University at West Lafayette (COE))

M131 - Cooperative and Experiential Education Division Technical Session 2

3:30 pm - 5:00 pm
206, Convention Center

Implementation of a Virtual Job Shadowing Experience for STEM Students Participating in a Corporate-STEM Connection Program

- Donald P. Visco (Professor of Chemical and Biomolecular Engineering)
- Nidaa Makki
- Erin R Stevic
- Joshua Eugene Phillips (The University of Akron)
- Elle Bonnema

Design-Based Research: Multiple cohorts of students seeking co-ops in a co-op-centric educational model

- Dennis Rogalsky (Assistant Professor)
- Bart M Johnson (Vice President Academic and Student Affairs)

Work in Progress: Novel Curriculum for Innovations in Healthcare using Theory of Co-Production as a Conceptual Framework

- Sabia Zehra Abidi (Lecturer) (Rice University)
- Javier Lasa
- Parag Nandlal Jain
- Kirsten Ostherr (Rice University)
- Austin Hwang (Northwestern University)
- Nellie Chen

Employers, a vital partner for program assessment

- Scott R Hamilton (Professor, Civil Engineering)
- Kelly Ann Arcieri (Co-op/Internship Advisor) (York College of Pennsylvania)

M15133 - ERM: Find Out More About Faculty!

3:30 pm - 5:00 pm
Nicollet A, Hyatt Regency
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Moderators: Natascha Trellinger Buswell (Assistant Professor of Teaching), Andrew Olewnik (Assistant Professor)

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Come hear about some interesting work being done focused on engineering faculty.

**Work in Progress: Faculty choice and reflection on teaching strategies to improve engineering self-efficacy**

- Sarah Lynn Orton (Dr.) (University of Missouri - Columbia)
- Fan Yu (University of Missouri - Columbia)
- Johanna Milord
- Lisa Y Flores (Professor) (University of Missouri - Columbia)
- Rose M Marra (Director) (University of Missouri - Columbia)

**Assessment of a professional development program on computational thinking for disciplinary teachers**

- Alejandro Espinal
- Alejandro J. Magana (W.C. Furnas Professor in Enterprise Excellence)

**Professional Shame amid Faculty-Student Interactions**

- James L. Huff (Associate Professor) (Harding University)
- Mackenzie Beckmon Sharbine (Harding University)
- Grant R. Countess (Harding University)
- Kyle Shanachilubwa (Harding University)
- Joachim Walther (Professor) (University of Georgia)
- Nicola W. Sochacka (Research Professional) (University of Georgia)

**Call without Response: Faculty Perceptions about Diversity, Equity, and Inclusion**

- Kaitlyn Anne Thomas (Student)
- Derrick James Satterfield (Doctoral Candidate) (University of Nevada, Reno)
- Jeanne Sanders (Postdoctoral Researcher) (University of Nevada, Reno)
- Adam Kirn (Associate Professor)
- Kelly J Cross (Assistant Professor)

**Exploring a Co-Teaching Model to Improve Classroom Engagement**

- Edward Latorre-Navarro
- Elizabeth Louise Meier

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**M15288 - FIE Planning Committee Meeting**

3:30 pm - 5:00 pm

**M100D, Convention Center**

Moderators: P.K. Imbrie (Head and Professor, Department of Engineering Education and Professor, Department of Aerospace Engin), Homero Murzi (Assistant Professor)

Speaker: Rachel Louis Kajfez (Assistant Professor)

Meeting of the FIE Planning Committee.

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**M15675 - ERM: Lessons Learned from COVID (COVID Part 2)**

3:30 pm - 5:00 pm

101E, Convention Center

Moderators: Maartje E. D. Van Den Bogaard (Research Fellow), Laura Bottomley

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This session is the sequel session with even more lessons we’ve learned over the last few years of living in pandemic.

**Establishing qualitative inquiry to understand student experiences in online experimentation (Work in progress)**

- Andrew Jackson (Assistant Professor)
- Beshoy Morkos (Associate Professor)
- Fred Richard Beyette (Professor and School Chair of Electrical & Computer Engineering)
- Amy Ragland
- Dominik May

**COVID-19 and the New Normal in Engineering and Computer Science Education: Students’ Perspectives on Online and Hybrid Education**

- Ona Egbue (Associate Professor)
- Arshia Khan (Dr) (University of Minnesota Duluth)
- Rania Al-hammoud (Dr.)

**NAVIGATING THE VIRTUAL LANDSCAPE: IMPLEMENTING A PEDAGOGICAL FRAMEWORK IN A VIRTUAL SUMMER ENGINEERING COURSE TO ENHANCE STUDENTS’ ACADEMIC DEVELOPMENT**

- Eleazar Marquez (Dr.) (The University of Texas Rio Grande Valley)
- Samuel Garcia (Education Specialist) (NASA EPDC)

**Impact of Covid-19 on Applied Mathematics Courses for Engineering Students**

- Gianluca Guadagni (Assistant Professor Applied Mathematics)
Deepyaman Maiti (Assistant Professor) (University of Virginia)
Farzad Shafiei Dizaji (Lecturer Professor)

The impact of different modes of instruction and its impact on students' performance during Covid-19 in an AutoCAD Design Course
Sarah Rajkumari Jayasekaran (Lecturer)
Saira Anwar (Texas & M, Department of Multidisciplinary Engineering)

M19 - Equity, Culture & Social Justice in Education Division
Technical Session 10
3:30 pm - 5:00 pm
205D, Convention Center

Moderator: Ingrid Scheel (Project Instructor)

Communities of Practice: Developing, Evaluating, and Improving a Program Aimed at Supporting Transformative Learning Among Underrepresented Undergraduate Students in Engineering
Rachael Cate
Aiden Jarrid Nelson

“You’re just not what they’re looking for”: An intersectional collaborative autoethnography exploring pathways to engineering design doctoral programs
Kayla Cantilina
Robert P. Loweth

In Search for Pleasurable Experiences for Black Girls and Women in Engineering and Computing
Simone Nicholson
Trina Fletcher

Balancing Social, Personal, and Work Responsibilities for Minoritized Doctoral Students in Engineering
Jerry Austin Yang (Student)
Crystal Alicia Nattoo

No Guarantees at a Hispanic Serving Institution: Unexpected Interracial Reflections
Cole Hatfield Joslyn (Assistant Professor of Practice) (University of Texas at El Paso)
Angelica Ann Encabo Littles
Amira Tynise Williams (University of Texas at El Paso)

M53724 - WIED: Activities and Programs

3:30 pm - 5:00 pm
201, Convention Center

Moderators: Suzanne Zurn-birkhimer (Associate Director), Anuja Kamat (Dr.) (Wentworth Institute of Technology)

Papers related to WIED activities and programs implemented, including mentoring, outreach, and employment opportunities.

Cross-Institutional Mentoring Communities Program
Adrienne Minerick
Cinzia Cervato (Iowa State University of Science and Technology)
Sonia Goltz (Professor of Organizational Behavior)
Canan Bilen-Green (Vice Provost for Faculty and Equity)
Mark Rouleau
David W. Wahl (Iowa State University of Science and Technology)
Patricia Sotirin (Research Professor)

Lessons Learned from 5 Years of Parent Daughter Engineering Outreach
Mary Foss (Weber State University)
Yucheng Liu (Department Head and Endowed Professor)

Longitudinal Analysis of First-Year Engineering Students’ Active Participation in Women in Engineering Program Activities and the Relationship to Engineering Persistence
Suzanne Zurn-birkhimer (Associate Director)
Mayari Illarij Serrano (Dr.) (Purdue University at West Lafayette (PPI))

Overview of the megaGEMS AEOP Summer 2021 Research Apprenticeship Camp
Stephanie Weiss-Lopez (AVS Labs Project Manager and GEMS Project Manager/Coordinator)
Michael Frye (Professor)
Orion A Jones (AVS Labs Research Assistant)

On-campus Employment: Work Meaningfulness, Work Engagement, and Social Responsibility of Women in Engineering Program Student Workers
Mayari Illarij Serrano (Dr.) (Purdue University at West Lafayette (PPI))
Suzanne Zurn-birkhimer (Associate Director)

STEM Program for Female Students during COVID-19 Pandemic
Anuja Kamat (Dr.) (Wentworth Institute of Technology)
Gloria Guohua Ma (Professor) (Wentworth Institute of Technology)
M88153 - PCEE Session 11: Engineering Outreach / Summer Programs

3:30 pm - 5:00 pm
200D, Convention Center

Moderator: Erica J Marti (Assistant Professor) (University of Nevada - Las Vegas)

Speakers: Aimee Monique Cloutier (Assistant Professor) (Rose-Hulman Institute of Technology), Maya Denton (Graduate Student), Joseph Tang (Assistant Professor) (Western Carolina University), Joanna M. Skluzacek (Professor) (University of Wisconsin - Madison)

The papers presented in this session include:
1. Design and Implementation of an Online Outreach Program for Experimental Measurements (Evaluation)
2. Extended Engagement in an Engineering Outreach Program at a Predominately Latinx High School (RTP, Diversity)
3. A career as an Engineer: Participant Perception and Attitude before and after an Engineering Summer Camp for Project Discovery Talent Search (Evaluation)
4. Content, Connection and Careers: Kit-Based Learning and Virtual University Connections (Evaluation)

M88195 - PCEE Session 12: STEM, Technology, and Engineering Education

3:30 pm - 5:00 pm
103A, Convention Center

Moderator: Jamie R Gurganus (Faculty, Associate Director of Engineering Ed, Director of CIRTL)

Speakers: Tyler S. Love (Assistant Professor of STEM Education) (Pennsylvania State University, Harrisburg, The Capital College), Philip A. Reed (Old Dominion University), Ryan Brown, Allison Antink-Meyer, Emily Anna Dare (Dr.) (Florida International University), Amy Wilson-lopez (Associate Professor)

The papers presented in this session include:
1. Overview of Standards for Technological and Engineering Literacy (Other)
2. Views about the Nature of Engineering Knowledge Among Secondary (6-12) Technology and Engineering Teachers (FUNDAMENTAL)
3. Current Practices in K-12 Integrated STEM Education: A Comparison Across Science Content Areas and Grade-Levels (Fundamental)
4. Principles for Designing Engineering Curricula Grounded in Environmental Justice (Fundamental)
All Sessions are Central Daylight Time

MONDAY, JUNE 27th SESSIONS

Amy Wilson-lopez (Associate Professor)
Jennifer Taylor
Ivonne Santiago (Associate Professor)

Current Practices in K-12 Integrated STEM Education: A Comparison Across Science Content Areas and Grade-Levels (Fundamental)
Emily Anna Dare (Dr.) (Florida International University)
Joshua Alexander Ellis (Associate Professor of STEM Education)
Mark Rouleau
Gillian Roehrig (Professor)
Elizabeth Ring-Whalen

M2037 - Engineering Economy Division Technical Session 1

3:30 pm - 5:00 pm
102D, Convention Center

Annuities as a Good Course Example
Neal A Lewis (University of Nebraska - Lincoln)
Ted Eschenbach (Professor Emeritus) (University of Alaska Anchorage)

The effect on perceived and performance learning outcomes from active online learning
Katie Leanne Basinger (Dr.)
Ariana Virginia Ortega
Diego Alvarado (University of Florida)
Michelle Alvarado (Assistant Professor) (University of Florida)

Community-engagement-based capstone projects: Lessons learned related to engineering economic analysis
Raymond Smith
James Randall Etheridge
Ricky T Castles (Associate Professor)

M76 - ECE Division Technical Session 4: Student-centered Learning and Teaching Methodologies

3:30 pm - 5:00 pm
202, Convention Center

Moderators: H. Bryan Riley (Professor of Practice), Jennifer L Bonniwell (Associate Professor) (Milwaukee School of Engineering)

ECE Division Technical Session 4 Student-centered Learning and Teaching Methodologies
Implementing Student Centered Teaching Methodology in Electrical and Computer Engineering Courses
Yuchen Huang (Instructor)
Branimir Pejcinovic (Professor) (Portland State University)

Student-designed assessments in electronic systems and signal processing courses
Saharnaz Baghaddachi (Teaching Professor)
Theresa Meyerott (Executive Director) (University of California, San Diego)
Paul Andreas Hadjipieris

Matching Preparation with Examination: Effectiveness of Video Assignments on Oral Examination Outcomes
Alex M Phan (University of California, San Diego)
Huihui Qi

Assessing Effectiveness of Different Teaching Modalities in Linear Circuits I
Zahrasadat Alavi (Assistant Professor) (California State University, Chico)

Using Mixed Exam Methods to Enhance Students Learning for Electronics Courses
Wei Wu (Assistant Professor)

M22441 - Engineering Libraries Division Roundtable Discussions

3:30 pm - 5:00 pm
Greenway CDE, Hyatt Regency

Moderators: Denise Amanda Wetzel (Science & Engineering Librarian) (Pennsylvania State University), Amy S. Van Epps (Director of Sciences and Engineering Services) (Harvard University)

M77181 - Biomedical Engineering Division: Best of Works in Progress

3:30 pm - 5:00 pm
210, Convention Center

Moderators: Devina Jaiswal (Dr.), Alexis Ortiz-rosario (Associate Professor - Clinical) (The Ohio State University)

In this interactive session, six authors will each pitch their work in progress as a five minute, two-slide “postcard”
overview. Attendees will then have the opportunity to interact with any author(s) they wish, to engage in dynamic, small-group discussion at the authors’ posters around the room. The Biomedical Engineering Division’s Best Work in Progress Award will be selected from these 6 presentations based on evaluators’ ratings of Relevance to BME Education, Innovation, Technical Merit, Demonstrated Outcomes, and Presentation Quality.

Work in Progress: Development of Virtual Reality Platform for Unmet Clinical Needs Finding in Undergraduate Biomedical Engineering Design Programs
Christine E King (Assistant Professor of Teaching)
Dalton Salvo (University of California, Irvine)
Jasmine Wang (University of California, Irvine)
Sriram Suresh Rao (University of California, Irvine)
Rahul Sreedasyam (University of California, Irvine)
Abhishek Sudhir Kulkarni (University of California, Irvine)
Shaan Braich (University of California, Irvine)
Ishaan Sharma (University of California, Irvine)

Work in progress: cost-effective table-top ultrasound systems as platform for biomedical engineering education
Bryan Ranger (Boston College)
Avneet Hira (Assistant Professor) (Boston College)
Brian Keith Smith (Babcock & Wilcox Company)
Xiang Zhang (Massachusetts Institute of Technology)

Work in Progress: JUMP TO IT! DEVELOPMENT AND EVALUATION OF A UNIQUE, SCALABLE BIOMECHANICS-THEMED LESSON TO BROADEN PARTICIPATION IN BIOENGINEERING AND RELATED DISCIPLINES
Jenni Buckley (Associate Professor) (University of Delaware)
Marcia Gail Headley (Data Scientist)
Amy Trauth (Dr.) (University of Delaware)
Laura Meszaros Dearolf
Margo Donlin (University of Delaware)
Kayla Pariser

Work in Progress: Enhancing Undergraduate Biomedical Engineering Laboratory Reports through Information and Data Literacy Instruction
Alexander James Carroll (Librarian for STEM Research) (Vanderbilt University)
Joshua Borycz
francisco.d.juarez@vanderbilt.edu Dejesus Juarez (Librarian) (Vanderbilt University Library)

Work in Progress: Development of a Learning Module on Intellectual Property Protection to Foster the Entrepreneurial Mindset in a Medical Device Design Course
Hao Jiang (Lawrence Technological University)

Work-in-Progress: Ethical, Legal, and Social Implications of Emergent Biotechnologies: Distributive justice and dual-use technology in the engineering design cycle curriculum
Cameron Kim

M48721 - Student Division Technical 3: Mixed - Research, Engineering Design, Design Thinking, and Curriculum Design
3:30 pm - 5:00 pm
209, Convention Center
This includes a mix of papers mostly related to design, but including curriculum design, and research outside the classroom.

Development of a Sociotechnical Module Exploring Electric Vehicle Batteries for a Circuits Course
Gracie Judge (Ph.D. Student at the University of Michigan)
Cynthia J. Finelli (Professor)
Susan M Lord (Professor & Chair)

WIP: A Pedagogical Intervention Leveraging Engineering Design Thinking to Foster a Tolerance for Ambiguity
Julia Machele Brisbane
Jeremi S London (Associate Professor)
Kingsley A. Reeves (Associate Professor)

Conducting Discipline-Based Educational Research Outside of the Classroom
Abigail Clark
Rachel Louis Kajfez (Assistant Professor)

Fast-Forward Program: PSVT:R Test Results and Analysis
Lauren Fogg
Allissa Taylor Gros (Louisiana Tech University)
Katie Evans (Dean) (Houston Baptist University)
Marisa K. Orr (Associate Professor)
Catherine Hendricks Belk (Clemson University)
Ethan Hilton
Mitzi Desselles (Associate Professor) (Louisiana Tech University)

Aesthetics and Engineering: A Path to Transformative Learning and Professional Confidence
Hugh Ephraim Scribner (University of Colorado Boulder)
Katherine Goodman (Assistant Professor)
Jean Hertzberg (Professor) (University of Colorado Boulder)

M4893 - Student Division
Technical 4: Student Experience & Competencies
3:30 pm - 5:00 pm
207, Convention Center

This technical session includes papers on student engagement, student experience, and competencies.

Exploring the Relationship Between and Undergraduate Students’ Level of Engagement and Perception of Support
Hamidreza Taimooriy (Student) (Virginia Polytechnic Institute and State University)
David B Knight (Associate Professor and Special Assistant to the Dean for Strategic Plan Implementation) (Virginia Polytechnic Institute and State University)
Walter C. Lee (Associate Professor)

What is teacher empathy in engineering education? A review of the literature
Camila Andrea Olivero Araya
Julie Martin

Work in Progress: Faculty Perceptions of STEM Student and Faculty Experiences during the Covid-19 Pandemic: A Fall 2020 Qualitative study.
Mehdi Lamssali (Doctoral Student)
Alesia Ferguson
Andrea Nana Ofori-boadu (Dr.)
Samuel Pierre
Angela White

Assessment of Changes in Engineering Students' Problem-Solving Strategies in a Senior Level Review Class
Jacob Vaughn (Texas Tech University)
Roman Taraban (Professor)
Sheima Khatib (Texas Tech University)

Work in Progress: Exploring Digital Competency Integration in Primary and Secondary Education
Brandon Chi-Thien Le
Sunay Palsole (Assistant Vice Chancellor for Engineering Remote Education) (Texas A&M University)

M8581 - ETD Technical Session 6 - Curriculum and Programs III
3:30 pm - 5:00 pm
205B, Convention Center

The Role of Ethical Hacking and Penetration Testing in Cybersecurity Education
Te-shun Chou (Professor) (East Carolina University)
Tijjani Mohammed (Chairperson) (East Carolina University)

Motivating Students to Learn Basic Electronic Theories by Adopting Them in Different Courses
Jack li

Industrial Distribution and Warehousing in Industry 4.0 era: A survey
Pouneh Abbasi
Malini Natarajantham (Associate Professor)
Michael Johnson (Professor)

A Pilot Course as a Step towards New Academic Programs in Renewable Energies
Otilia Popescu (Associate Professor)
Orlando M Ayala (Associate Professor)
Isaac L Flory (Associate Professor) (Old Dominion University)
Jose Ricardo Fernandez (Old Dominion University)
Vukica M. Jovanovic (Chair & Associate Professor)

M86318 - Metamorphosis: Transformational Ideas for Emergent Educators
3:30 pm - 5:00 pm
200H, Convention Center

Moderators: Derek Breid, Kerry R Widder (Assistant Professor) (Milwaukee School of Engineering)
Speakers: Ashish D Borgaonkar (Assistant Professor), Cynthia Wise Barnicki (Professor), Sara A. Atwood (Dean of the School of Engineering, Mathematics, and Computer Science, and Associate Professor of Phy), Luke Landherr, Doug Tougaw (Dean of Engineering), Brooke Charae Coley (Assistant Professor)

Title: Metamorphosis: Transformational Ideas for Emergent EducatorsIt’s been a tough couple of years to be a new educator – or even an experienced one. Most of us have been surviving more than we’ve been thriving. But as the education world emerges from the dark days of breakout rooms and Zoombies, we’re presented with a unique
opportunity to rethink our teaching styles and pedagogical practices to foster a more effective and engaging classroom. Engineering educators are often thrust into teaching with little to no pedagogical training. Those that strive for teaching excellence soon realize that it requires much more than expertise and eloquence, but may not know how to take their teaching to the next level. The panelists in this session represent experienced educators who utilize a variety of pedagogical strategies and teaching techniques.

M75542 - ASEE Data Town Hall

3:30 pm - 5:00 pm
M100FG, Convention Center

Speaker: Joe Roy (Director of Institutional Research and Analytics)

Come hear the initiatives underway from ASEE’s Department of Institutional Research & Analytics. There will be three main topics: Potential changes for Profiles 2022; A review of changes made to the faculty salary survey; and the incorporation of student-level data from MIDFIELD into the Profiles Survey. Included in these topics are current changes and potential future changes to better capture professional track faculty data in engineering and engineering technology.

M75544 - Interdivisional Town Hall Meeting: Preparing Engineers for the 2030s

3:30 pm - 5:00 pm
Ballroom B, Convention Center

This Town Hall will revisit the topic of the Engineers of the Future with the intent to develop engineers for the 2030s and professionally develop faculty to achieve this goal. In 2004, the National Academy of Engineering published The Engineer of 2020: Visions of Engineering in the New Century, which urged the engineering profession to recognize what engineers can build for the future through not just technical jobs but also a wide range of leadership roles in industry, government, communities, and academia.

Program Assessment

3:30 pm - 5:00 pm
101C, Convention Center

This session provides an overview of the program assessment process, highlighting a few key elements of a successful and sustainable planning process. Learn components of, and how to organize, your assessment process to ensure efficient assessment and impactful results. Next, ask a question, listen and learn alongside colleagues in an open discussion on best practices in program assessment. Speakers: James Warnock, Professor and Founding Chair, School of Chemical, Materials and Biomedical Engineering University of Georgia and Adjunct Director of Professional Offerings, ABET

M91132 - DEED Technical Session

11 Empathy and Human-Centered Design 2

3:30 pm - 5:00 pm
101I, Convention Center

Moderator: Matilde Luz Sanchez-pena (Assistant Professor)

Investigating a Socially Engaged Design Process Model
Kelley E Dugan
Shanna R. Daly (Associate Professor) (University of Michigan)
Charlie Michaels (Director of Experiential Learning) (University of Michigan)
Steve J. Skerlos (Arthur F. Thurnau Professor) (University of Michigan)
Ann Verhey-Henke (Strategic Director) (University of Michigan)

Understanding How Children on the Autism Spectrum Engage in Solution Optimization during a Design Activity
Hoda Ehsan (Director of Quadrivium Design and Engineering ) (The Hill School)
Monica E. Cardella (Director, School of Universal Computing, Construction and Engineering Education) (Florida International University)

From Value- to Norm-sensitive Design? An Empirical and Intercultural Framework
Rockwell Clancy
Qin Zhu (Assistant Professor) (Colorado School of Mines)
Diana Adela Martin (Eindhoven University of Technology)
Gunter Bombaerts

Student Perceptions of Ideation and Prototyping Tools in an Introductory Engineering Human-Centered Design Course
M9132 - DEED Technical Session
2: Postcard Session

3:30 pm - 5:00 pm
Lakeshore A, Hyatt Regency

Moderator: Corey T Schimpf (Assistant Professor)

Moderator: Corey Schimpf contact: schimpf2@buffalo.edu
In this exciting hybrid session, authors will have 5 minutes
to succinctly present their work in "postcard" format (i.e. two slides). Once presenters have finished, the
session will turn into a roundtable session where you can
speak one-on-one with authors for more in-depth discussion
about their work.

Online Learning During Covid-19 in a Making Centered Engineering Community
Kelly Sadel
Melissa Aleman
Robert L. Nagel

STEAM student recruitment through a pre-college customer-centric design enrichment experience (WIP)
Davor Copic (Lecturer in Engineering) (United States Coast Guard Academy)
Nathan Daniel Barnes (LCDR) (United States Coast Guard Academy)
Joshua Daniel Pennington (United States Coast Guard Academy)
Joseph F. Camean (Lecturer)

Work in Progress: Experiences Utilizing Engineering Design Projects in Early Curricular Engineering Courses at a Hispanic-serving Institution
David Hicks
Michael Preuss (Co-founder and Lead Consultant)
Matthew Alexander
Rajashekar Reddy Mogiligidda (Lecturer 1) (Texas A&M University - Kingsville)
Mahesh Hosur

Modeling in a University-Industry Collaboration: Deep and Surface Approaches
Michael James Madiol
Molly H Goldstein (Assistant Teaching Professor) (University of Illinois at Urbana - Champaign)
Abigail R Wooldridge (Assistant Professor) (University of Illinois at Urbana - Champaign)
Kaitlyn L. Hale-Lopez (University of Illinois at Urbana - Champaign)

Constructive Controversy: Optimizing Decision Making in Engineering Design Teams
Shaghayegh Abbasi (Assistant Professor)
Jordyn Wolfand (Assistant Professor) (University of Portland)
Shazib Z Vijlee (University of Portland)

M9714 - CIT Division Technical Session #6
3:30 pm - 5:00 pm
M101C, Convention Center

Moderator: Afsaneh Minaie

Speakers: Biswajit Biswal, Emil H Salib (Professor), Sharon Ferguson, Abdulmalek Al-Gahmi (Assistant Professor) (Weber State University)

Following papers will be presented during this session:
89: On Time-based Exploration of LMS Data and Prediction of Student Performance. (Abdulmalek Saleh Al-Gahmi)
118: Advancing a Model of Students’ Intentional Persistence in Machine Learning and Artificial Intelligence. (Sharon Ferguson).

SSCTrac: AI-Powered Soil Moisture Condition Detection
Biswaıt Biswal

A cost effective smart trough monitoring alert system
Emil H Salib (Professor)

Advancing a Model of Students’ Intentional Persistence in Machine Learning and Artificial Intelligence
Sharon Ferguson
James N Magarian (Lecturer)

M25103 - Entrepreneurship &
2022 ASEE ANNUAL CONFERENCE
MONDAY, JUNE 27th SESSIONS

Engineering Innovation Division Technical Session 3

3:30 pm - 5:00 pm
200F, Convention Center

Moderator: Jason Forsyth (Associate Professor of Engineering)

Assessing Awareness level of Engineering Graduate Students about Innovation Commercialization at Historically Black Colleges and Universities

Sampson Addo (Mr.) (University of the District of Columbia)
Pawan Tyagi (Prof.) (University of the District of Columbia)
Eva Mutunga (University of the District of Columbia)

Longitudinal Assessment of Engineering Student EM Using the ESEMA Self-Report Survey

Alexandra Mary Jackson
Kevin D. Dahm (Professor of Chemical Engineering)
Kaitlin Mallouk (Assistant Professor)
Bruce Oestreich
Cheryl A Bodnar (Associate Professor, Experiential Engineering Education)

The Connotation and Structure of intrapreneurs’ competence: An empirical analysis based on UCINET and questionnaire survey

yongxin deng
Wei Shi (China University of Mining and Technology)

Assessing Entrepreneurial Mindsets – A Work-In-Progress paper exploring how to create and deploy quantitative and qualitative assessments for student entrepreneurial mindset development

Aubrey Wigner (Teaching Assistant Professor) (Colorado School of Mines)
Sarah Kuang (Michigan State University)
Kevin Miceli (Michigan State University)

M26410 - Environmental Engineering Business Meeting

3:30 pm - 5:00 pm
M100HI, Convention Center

Environmental Engineering Business Meeting

M27725 - Faculty Development Division Technical Session 2

3:30 pm - 5:00 pm
200G, Convention Center

Moderator: Grenmarie Agresar

Speaker: Homero Murzi (Assistant Professor)

Dean’s Racial Justice Curriculum Challenge (WIP)

Paula Rees (Assistant Dean for Diversity)
Scott A Civjan (Professor)
Erin Baker (Professor) (University of Massachusetts Amherst)
Promise Mchenga
Hannah Wharton (University of Massachusetts Amherst)
Jacqueline E Thornton (Software Developer)
Lia Marie Cienny
Esha Ayman Uddin (University of Massachusetts Amherst)
Samantha Wojda
Shannon Roberts (University of Massachusetts Amherst)
Wayne P. Burleson
Nicholas Tooker

Lessons Learned: Assessing, Discussing, and Shifting the Climate and Culture in Engineering

Vicki V. May (Professor) (Dartmouth College)
Diana Kardia

Lessons learned - Conducting an External Evaluation of a STEM Teaching and Learning Center (Lessons Learned Paper #1 of 2)

Stephanie Cutler (Assessment and Instructional Support Specialist)
Sarah E Zappe (Assistant Dean for Teaching and Learning; Director of the Leonhard Center)
Sam Spiegel (Assistant Vice President for Online Education)
Deb Jordan (Trefny Center Director)
Megan Sanders (Senior Assessment Associate) (Colorado School of Mines)

Lessons Learned: Findings from an External Evaluation of a STEM Teaching and Learning Center (Lessons Learned Paper #2 of 2)

Deb Jordan (Trefny Center Director)
Sam Spiegel (Assistant Vice President for Online Education)
Megan Sanders (Senior Assessment Associate) (Colorado School of Mines)
Stephanie Cutler (Assessment and Instructional Support Specialist)
Sarah E Zappe (Assistant Dean for Teaching and Learning; Director of the Leonhard Center)

**LESSONS LEARNED - PREPARING GRADUATE STUDENTS AND POSTDOCTORAL RESEARCHERS FOR TENURE TRACK CAREERS THROUGH MENTORING CIRCLES**

Morgan R Broberg (Graduate Student) (Purdue University at West Lafayette (COE))
Baishakhi Bose
Raul Andres Pineda-Mendez (Postdoctoral Research Associate) (Purdue University at West Lafayette (COE))
Rachel Elisabeth Gehr (PhD Student) (Purdue University at West Lafayette (PPI))
Camila García Jange (Purdue University at West Lafayette (COE))
Jacqueline E McDermott (Associate Director of Graduate Diversity and Inclusion) (Purdue University at West Lafayette (COE))
Michael C. Loui (Professor Emeritus)
Jessica Eisma (The University of Texas at Arlington)

**M28148 - First-Year Programs Division Technical Session 10: Best of First-Year Programs Division**

3:30 pm - 5:00 pm
101G, Convention Center

**Moderators: Timothy Hinds, Andrew Charles Bartolini (Assistant Teaching Professor)**

**Converting a First-Year Engineering, Makerspace Course into COVID-Necessitated Fully-Online Synchronous Delivery and Related Student Perceptions**

Fei Bi Chan
Nicholas Hawkins (Assistant Professor) (University of Louisville)
James E. Lewis (Associate Professor)
Thomas Tretter

**Low and High Performing First-Year Engineering Students’ Learning and Metacognitive Strategies**

Kayla Ney (University of Nebraska - Lincoln)
Heidi A. Diefes-Dux (Professor)
Emily Stratman

**Instructional Feedback Practices in First-Year Engineering Technical Writing Assignments: Qualitative Coding**

**Synthesis, Analysis and Comparison**

Connor Jenkins
Krista M Kecskemety (Associate Professor of Practice)

**Investigating Engineering Persistence through Expectancy Value Theory and Machine Learning Techniques**

Campbell R Bego (Assistant Professor)
Pamela Bilo Thomas
Xiaomei Wang (Assistant Professor) (University of Louisville)

**A Strategic Curriculum Design for an Introductory Engineering Course to Encourage Self-Empowerment of Minority Students**

Victor Manuel Garcia (Research Associate)
Irmay Torres-catanach (Post-Doctoral Researcher)
Diane Elisa Golding (Assistant Professor of Instruction) (University of Texas at El Paso)
Crystal Cholewa (Program Manager)
Nora Cuvelier (Research Assistant)
Peter Golding (Director, CREaTE) (University of Texas at El Paso)

**M29713 - Graduate Studies Division Technical Session 2**

3:30 pm - 5:00 pm
200C, Convention Center

**State of Evaluating the Effectiveness of Teaching Development Programs for Students in Engineering**

Jutshi Agarwal
Samieh Askarian (University of Cincinnati)
Gregory Warren Bucks (Associate Professor - Educator)
Teri J Murphy (Professor) (University of Cincinnati)

**Teaching Assistant Team in a Graduate-Level Engineering Course**

Philip Michael Holmes
Shuai Leng (Mayo Clinic)
Cynthia McCollough (Professor of Medical Physics and Biomedical Engin.,) (Mayo Clinic)

**Development of a graduate-level capstone course for interdisciplinary researchers: design approaches and lessons learned**

Mirit Shamir (NRT Academic Services Coordinator)
Stacy L Hutchinson (Assistant Professor) (Kansas State University)
Gaeea A Hock
Ryan Robert Hansen (Kansas State University)
M3030 - Computers in Education 2 - Programming 2

3:30 pm - 5:00 pm
213, Convention Center

Moderator: John W. Pierre (Professor)

This session will focus on papers related to teaching students how to program computers in the realm of programming courses.

Auto-Awarding Points for Incremental Development in Programming Courses
Frank Vahid (Professor) (University of California, Riverside)

Work-in-Progress: Using a Scavenger Hunt to Tackle Challenges of CS1: Computational Thinking, Analyzing Code, and Debugging
Stephany Coffman-wolph (Assistant Professor)

WIP - iCtrl - A Remote Login Software Application
Junhao Liao
Haoran Zhang (University of Toronto)
Yizhong Xu (University of Toronto)

M35718 - LEES 2: Stories of Intersectionality and Institutional Marginalization

3:30 pm - 5:00 pm
101D, Convention Center

Moderator: Erin Cech

Perspectives of Seven Minoritized Students in a First-Year Course Redesign toward Sociotechnical Engineering Education
Desen Ozkan
Chelsea Andrews

Reimagining Methodologies: Why We Center Marginalized Voices
Victoria Siaumau
Yumi Rosa Aguilar
Emily Flores
Jane L. Lehr (Professor)
Lynne A Slivovsky (Professor)

Equality, Diversity and Inclusion Initiatives in Graduate Engineering: A UK based case study
Francesca J Bartram
Natalie Wint
David Maxwell Rea (Associate Professor)

“I Don’t Like Thinking About this Stuff”: Black and Brown Student Experiences in Engineering Education
Janelle Grant
Stephanie Masta (Associate Professor)
Alice Pawley (Professor)
Matthew W. Ohland (Dale and Suzi Gallagher Professor of...
M72518 - Architectural Engineering Business Meeting
3:30 pm - 5:00 pm
M100E, Convention Center

M723 - Technological and Engineering Literacy/Philosophy of Engineering Division Technical Session 2
3:30 pm - 5:00 pm
205C, Convention Center

Assessment of Critical Thinking Skills in Engineering Education
Sayyad Zahid Qamar (Prof Dr)
Nasr Hamood Al-hinai (Assistant Professor) (Sultan Qaboos University)
Sayyad Basim Qamar (PhD Student) (Texas A&M University)

Faculty Responsibility for Student Safety, Health, and Welfare?
Angela R Bielefeldt (Professor)

Transdisciplinary STEAM education: Advocating for compassion as a core value in engineering
Cristian Eduardo Vargas Ordonez
Morgan M Hynes (Assistant Professor) (Purdue University at West Lafayette (COE))

Engineering Moment as a Pedagogical Approach: Using Narrative Theory to Promote Student Awareness of their Engineering Identities
Harly Ramsey (Associate Professor of Technical Communication Practice)

Empathy Lesson as a Means of Shifting Student Perception on Role of Engineer
Thomas Shepard (Clinical Professor) (University of St. Thomas)

M7246 - Civil Engineering Division - Mechanics Applied and the Best in Five... Get Ready!
3:30 pm - 5:00 pm

M100J, Convention Center

Moderators: Charles Riley (Professor), Kevin Dong (California Polytechnic State University, San Luis Obispo)

The crowd favorite “Best in Five” session will be combined this year with full papers on topics that address student learning in subjects based on fundamentals in mechanics, with one paper identifying the key sticking points for students learning mechanics. From moment of inertia and Mohr’s circle to block shear in steel beam connections, students struggle with visualizing physical behavior and stress development. In this combined session, attendees will be treated to three regular paper presentations and four “Best in Five” demonstrations of hands-on physical models. Instructional approaches presented vary from small, mobile demonstrations to full scale, destructive testing.

Instruction and Assessment of Mohr’s Circle Concepts in Undergraduate Geotechnical Engineering Courses
James Kaklamanos (Associate Professor of Civil Engineering)
Simon Thomas Ghanat (Associate Professor)
Craig M. Shillaber (Northeastern University)
Tanya Kunberger (Professor & Chair) (Florida Gulf Coast University)
Brock E. Barry (Director, Civil Engineering) (United States Military Academy)
Shawn Griffiths (Dr.) (University of Wyoming)
Corrie Walton-macaulay (Assistant Professor) (Saint Martin’s University)
Suresh Immanuel (Associate Dean and Professor, School of Engineering and Computer Science) (University of Evansville)
David Saffiner

3D Printed Composite Body Illustrating Area and Mass Moment of Inertia with Mohr’s Circle and Pole Method
Timothy Kaklamanos (Associate Professor) (The Citadel)
Ege Arslaner

Design and Implementation of Experiential Learning Modules for Steel Design
J Chris Carroll (Associate Professor and Civil Engineering Program Coordinator) (Saint Louis University)
John Aidoo (Professor) (Rose-Hulman Institute of Technology)
Matthew D. Lovell (Associate Professor) (Rose-Hulman Institute of Technology)
Kyle Kershaw (Associate Professor) (Rose-Hulman Institute of Technology)
Yielding and Fracture and Block Shear, Oh My! (Best in 5 Session)
Anthony Battistini (Assistant Professor)
Guillermo Alvarez

MULTIPLE INTERACTIVE HANDS-ON APPLICATIONS IN STATICS (BEST IN 5 MIN DEMONSTRATIONS SESSION)
Mohammad Yamin (Minnesota State University, Mankato)
Khosrow Ebrahimi
Kevin Schull (Engineering Specialist Senior) (Minnesota State University, Mankato)

Identifying Sticking Points: Common Mechanics Errors Made by Civil Engineering Students
Jakob C Bruhl (Civil Engineering Academy Professor) (United States Military Academy)
Joseph P Hanus (Professor) (United States Military Academy)
Kevin Mcmullen
Brett Rocha

Fifteen-Plus Years of Strength of Materials with Pool Noodles and More!
Harry G Cooke (Associate Professor) (Rochester Institute of Technology (CET))

3:30 pm - 5:00 pm
212, Convention Center

M390 - Equity, Culture, and Social Justice in Education Division Business Meeting

Moderators: Juan M Cruz (Rowan University), Vemitra White Alexander (NASA Education Specialist)
Exploring Climate and Student Persistence in Engineering and Computer Science through Engineering Culture (Work in Progress)
Laura Ann Gelles (Postdoctoral Research Associate)
Amy Walker

Minority-serving Institution Partnerships Strengthen Underrepresented Minority Recruitment for a Research Experience for Undergraduates Program (Experience)
Jessica Ohanian Perez (Associate Director of Education and Inclusivity)
Joe Muskin (Education coordinator) (University of Illinois at Urbana - Champaign)
Henry Griffith (Assistant Professor and Program Coordinator)
Andrew G Alleyne (University of Minnesota - Twin Cities)

A PROBLEM-BASED LEARNING APPROACH TO DEVELOP MINORITY STUDENTS’ SUSTAINABILITY KNOWLEDGE AND PROFESSIONAL SKILLS
Rubaya Rahat
Piyush Pradhananga
Mohamed Elzomor (Assistant Professor) (Florida International University)

Supplemental Instruction to Decrease Equity Gaps in Gate-Keeper Engineering Courses (ERM)
Jessica Ohanian Perez (Associate Director of Education and Inclusivity) (California State Polytechnic University, Pomona)
Faye Linda Wachs (Professor) (California State Polytechnic University, Pomona)
Harmony Nguyen
Deanna Miranda Barrios
Lily G. Gossage (Director, Maximizing Engineering Potential) (California State Polytechnic University, Pomona)

Reinvent K-12 Education System: Prepare Underrepresented Students for STEM
Tahir M Khan
Denise Whitford (Purdue University at West Lafayette (COE))
Lisa Lambert Snodgrass (Assistant Professor) (Purdue University at West Lafayette (COE))
Sunnie Watson (dr) (Purdue University at West Lafayette (COE))

3:30 pm - 5:00 pm
M622 - UEC Technical Session
- Ensuring the Curriculum is
Diverse and Inclusive

3:30 pm - 5:00 pm
205A, Convention Center
Moderator: April Dukes
Speaker: Donald Gillian-Daniels

Excellence in engineering education requires an institutional focus on diversity, equity, and inclusion (DEI). This may include consideration of demographics (e.g., student, faculty, staff), recruitment and retention, the curriculum, institutional climate, etc. This session will introduce participants to the Inclusive Professional Framework for Faculty (IPF: Faculty), a research-informed, holistic, professional development model created by the NSF INCLUDES Aspire Alliance. The IPF: Faculty enables deans and other institutional leaders to consider their DEI-focused policies, practices and programs, and conduct a deeper examination of these institutional structural systems in tandem with both interpersonal and individual systems (e.g., dynamics and mental models), to better promote sustained change. Participants will apply the framework to their local DEI work.

M56720 - Statics Fanatics 2

3:30 pm - 5:00 pm
101F, Convention Center
Moderators: Kevin Mcmullen, James Lord (Collegiate Assistant Professor)

Adding design, improved FBDs, and a truss competition are only a few of the exciting topics to be discussed in this session.

Work-in-Progress: Redesigning an Introductory Mechanics Course to Include Meaningful Design Experiences
Damon Kirkpatrick
Michael Anderson

An Evaluation of The Relationship between Spatial Skills and Creating a Free Body Diagram
Sheryl A. Sorby (Professor) (University of Cincinnati)
Gavin Duffy
Divyang Soni (University of Cincinnati)
Grace Panther (Assistant Professor)

Improving understanding of reaction forces in free body diagrams using a paired vector object in Prairie Learn

Hadas Ritz (Senior Lecturer)
Sanjit Basker
JINGJIE YEO (Assistant Professor) (Cornell University)

Work in Progress: Reformulation of a Truss Competition Course Project to Improve Educational Outcomes
Luke Fredette (Assistant Professor) (Cedarville University)
Michael Kennedy (Student) (Cedarville University)

Work in Progress - Strategies for Stimulating Engineering Relevance in Statics Education
Sridhar S. Condoor (Professor) (Saint Louis University)
Sanjay Jayaram (Associate Professor) (Saint Louis University)
Jalil Kianfar (Associate Professor of Civil Engineering) (Saint Louis University)

M591 - SPONSOR TECH SESSION: Improve and Accelerate Assessment for more Effective Learning -Presented by Gradescope by Turnitin

3:30 pm - 5:00 pm
101A, Convention Center
Speaker: Beth Hess

Learn how one instructor was able streamline and transform their grading process through the use of Gradescope—a “life-changing” online feedback and assessment platform. Listen as they share how shifting their old assessment workflows actually improved the accuracy of assessments, eliminated the stress of paper management and lowered the amount of regrade requests. You will see firsthand how Gradescope can be used to dramatically decrease the amount of time spent grading and enable you to provide quality and consistent feedback. Whether you’re grading 20, 200, or 2,000 students, Gradescope can help!

M599 - SPONSOR TECH SESSION: Impact Driven Entrepreneurship - Presented by Texas A&M Engineering

3:30 pm - 5:00 pm
101B, Convention Center
Speakers: Magdalini Lagoudas, Rodney Boehm (Director of
Engineering Entrepreneurship) (Texas A&M University)

This is a ticketed session. To add this ticket to your registration, please click the button below.

**M6245 - Professional Skills and Community Building in Chemical Engineering Education**

**3:30 pm - 5:00 pm**

**200E, Convention Center**

**Insights and Outcomes from a Revolution in a Chemical Engineering Department**

Vanessa Svihiha  
Madalyn Wilson-fetrow (Graduate Student Researcher) (University of New Mexico)  
Yan Chen  
Eva Chi (Professor) (University of New Mexico)  
Abhayya K. Datye (Professor & Chair) (University of New Mexico)  
Catherine Anne Hubka (Ms.) (University of New Mexico)

**Redesigning to Foster Community in an Online Introductory Chemical Engineering Course**

Christopher V.H.-H. Chen (Senior Assistant Director)

**Outreach Projects: Towards a Structured Curricular Activity for Chemical Engineering Students**

Joaquin Rodriguez (Faculty) (University of Pittsburgh)

**Impacts of implementing up-to-date industry problems on engineering identity development**

Betul Bilgin (Clinical Associate Professor)  
James W Pellegrino (Professor) (The University of Illinois at Chicago)  
Cody Wade Mischel (The University of Illinois at Chicago)  
Lewis E Wedgewood (The University of Illinois at Chicago)

**Incorporation of Research & Development-Focused Professional Skills in a Chemical Engineering Elective Course**

Deborah Goldberg

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**M712 - Experimentation and Laboratory-Oriented Studies Division Technical Session 2: Instructional/Learning Resources and Pedagogies**

**3:30 pm - 5:00 pm**

**102F, Convention Center**

**Moderator: Robby Sanders (Associate Professor)**

Come learn more about student perceptions of supplemental instructional videos, changes to laboratory-based experiences prompted by the pandemic, and knowledge acquisition/knowledge transfer pedagogies.

**Student Post-Pandemic Perceptions of Supplemental Instructional Videos**

Rachel Mosier (Associate Professor)  
Carisa H Ramming (Assistant Dean)  
Sanjeev Adhikari (Dr.) (Kennesaw State University)  
Robert John Agnew (Associate Professor) (Oklahoma State University)

**Tools and Methods for enabling senior design classes during the COVID19 pandemic and their application to future challenges**

stavros kalafatis (Professor of Practice) (Texas A&M University)  
John D Lusher (Associate Professor of Practice) (Texas A&M University)

**Introducing Experimental Design to Promote Active Learning**

Yevgeniy Yesilevskiy  
Annika Thomas (Columbia University in the City of New York)  
Jessica Oehrlein (Fitchburg State University)  
Melissa A Wright  
Michael Tarnow (Columbia University in the City of New York)

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**M659 - Council of Institutional Councils**

**3:30 pm - 5:00 pm**

**M100A, Convention Center**

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**M75528 - FOCUS ON EXHIBITS: Welcome Reception**

**5:00 pm - 6:30 pm**

**Exhibit Hall B & C, Convention Center**

Join your colleagues at the Grand Opening of the Exhibit Hall. Our exhibit hall is packed with exciting products,
solutions, and technologies. Explore the new content while enjoying refreshments, catching up with old friends, and making new ones. Be sure to check out previous Best Paper Winner Posters, located at the ASEE Member Engagement Booth. Board Number Title Authors1 Reimagining Engineering Education: Does Industry 4.0 need Education 4.0? Shuvra Das; D. Kleinke; D. Pistrui 2 The IMPACT mentoring program: Exploring the benefits of mentoring for emeriti faculty Sylvia L. Mendez, Jennifer Tygret, Rebecca Keith, Valerie Martin Conley, Comas Haynes, and Rosario Gerhardt 3 Do Open-Ended Design Projects Motivate First-Year Engineering Students? Chao Wang 4 Curricular Complexity as a Metric to Forecast Issues with Transferring into a Redesigned Engineering Curriculum David Reeping

M75702 - Exhibit Hall
5:00 pm - 6:30 pm
Exhibit Hall B & C, Convention Center

M775639 - ASEE President’s International Reception (By Invitation Only)
6:00 pm - 7:30 pm
Northwoods, Hyatt Regency
Moderator: Adrienne Minerick
By invite only

M77347 - Civil Engineering Division RAP Session
6:00 pm - 9:00 pm
Brit’s Pub, 1110 Nicollet Mall, Minneapolis Minnesota
The annual RAP Session of the Civil Engineering Division provides members and guests of the division a chance to interact in an informal setting to discuss current and emerging topics or simply socialize. Event registration not required but encouraged.

M722358 - ELD Welcome Reception
6:00 pm - 9:30 pm

By Invite Only. Reservations available through the ELD listserv

Welcome reception for ELD members. Location details and RSVP will be sent on the ELD-L email discussion list (see https://sites.asee.org/eld/).

M785470 - ETD - McGraw/Berger Award Dinner
6:00 pm - 9:00 pm
None, The Capital Grill
This is a ticketed session. To add this ticket to your registration, please click the button below. $85 ticket price https://www.capitalgrille.com/locations/mn/minneapolis/minneapolis/8010

M84693 - Engineering Physics and Physics Division Social Event
7:00 pm - 9:00 pm
The News Room Restaurant, 990 Nicollet Mall, Minneapolis, MN
This is a ticketed session. To add this ticket to your registration, please click the button below

M85361 - CIEC - Industry and Education Collaboration Social
7:00 pm - 9:00 pm
None, Brit’s Pub, 1110 Nicollet Mall, Minneapolis Minnesota
This is a ticketed session. To add this ticket to your registration, please click the button below.

“Join the College-Industry Partnership Division (CIPD), Continuing Professional Development Division (CPDD), Cooperative and Experiential Education Division (CEED), and Engineering Technology Division (ETD) for an evening social.”

M26351 - Environmental Engineering Division Social
7:00 pm - 9:00 pm
None, Bucca Di Bepo

This is a ticketed session. To add this ticket to your registration, please click the button below. Environmental Engineering Division Social-Bucca Di Bepo is a short walk from the convention center. We will gather to reconnect, eat great food, celebrate awardees and have some games. There are vegetarian options and all are welcome. Please know that this is a ticketed event to help us ensure that our reservations can manage our group. Feel free to email any questions to David Sanchez (david.sanchez@pitt.edu). NOTE: Awardees who have received awards from the Environmental Engineering Division from our past 2 conferences (2020, 2021) will be able to attend at no-cost.

M28524 - First-Year Programs Division Social
7:00 pm - 9:00 pm
Finnegan's Brew Company; 817 South 5th Ave. Minneapolis

This is a ticketed session. To add this ticket to your registration, please click the button below. Join the First-Year Programs Division members for a dinner and social. This is an excellent time to meet other members of the FPD community! During dinner, we will present our Division Awards. This year we will be gathering at Finnegan's Brew Company, a 10 minute walk from the Convention Center. Your ticket includes food from a Minneapolis caterer and one drink ticket. A cash bar will also be available. We look forward to seeing you there! Attendees who need transportation to the site will need to arrange this on their own. No transportation will be provided by FPD.

M75646 - Campus Rep Reception
7:00 pm - 9:00 pm
Seasons, Convention Center

Annual Campus Representatives reception and awards ceremony.

M75571 - Order of Tattered Purple Badges - Past Presidents Dinner
7:00 pm - 9:00 pm

Hiawatha, Hyatt Regency

Moderators: Bevlee A. Watford (Associate Dean), Stephanie G. Adams (Dean and Lars Magnus Ericsson Chair Office of the Dean of Engineering) (University of Texas at Dallas)

This is a ticketed session. To add this ticket to your registration, please click the button below. Past Presidents Dinner hosted by ASEE Past President Bev Watford and Stephanie Adams

M39344 - Mechanical Engineering Division Convivium
7:00 pm - 9:00 pm
Brit's Pub, 1110 Nicollet Mall, Minneapolis Minnesota

This is a ticketed workshop session. To gain access, purchase this session in Impexium Mechanical Engineering Division Convivium Social-Brit's Pub: (0.3 mi from convention center)For over thirty years Brit's Pub has been Minneapolis's own little corner of the UK. The pub is known for nights by the fireplaces in the winter and lawn bowling on the rooftop deck in the summer - with a whole lot in between including legendary TV football (soccer!) and rugby events. We are also proud to have a unique range of Private Event spaces, many with their own bar and fireplace. Thanks to both Mpls.St.Paul magazine for voting us pub of the year 2021…and to Thrillist for naming us one of the top rooftop bars in America. INCLUDES OUTDOOR PATIO AREA FOR PRE/POST SOCIALIZING.1110 Nicollet Mall, Minneapolis, MNThe Long RoomBrit's original event facility features a wood burning fireplace, antique bar and two pool tables. The Long Room will accommodate up to 140 guests for standing receptions and 60 for seated functions. This room may be divided into smaller areas, the Main Floor and the Mezzanine, to accommodate fewer guests. (BUFFET WILL BE ON MEZZANINE)

M42356 - Multidisciplinary Engineering Division Social
7:00 pm - 9:00 pm
None, Minneapolis Sculpture Garden

This is a ticketed session. To add this ticket to your registration, please click the button below. The business meeting will take place in the Minneapolis Sculpture Garden.
picnic area where food will be provided. This will be followed by a social hour at Lakes and Legends Brewing Company https://www.lakesandlegends.com/. The Sculpture Garden is ~25 walk from the convention center through Loring Park. The Brewing Company is ~15 walk from the Sculpture Garden back towards the Convention Center. In case of rain, we will meet at Lakes and Legends Brewing Company at 7 pm to conduct business, eat, and socialize.

**M41478 - PCEE/MIND/WIED**

**Social**

*7:00 pm - 9:00 pm*

*Nicollet C, Hyatt Regency*

This is a ticketed session. To add this ticket to your registration, please click the button below.

**M42414 - Multidisciplinary**

**Engineering Business Meeting**

*7:00 pm - 9:00 pm*

*None, Minneapolis Sculpture Garden*

This is a ticketed session. To add this ticket to your registration, please click the button below. The business meeting will take place in the Minneapolis Sculpture Garden picnic area where food will be provided. This will be followed by a social hour at Lakes and Legends Brewing Company https://www.lakesandlegends.com/. The Sculpture Garden is ~25 walk from the convention center through Loring Park. The Brewing Company is ~15 walk from the Sculpture Garden back towards the Convention Center. In case of rain, we will meet at Lakes and Legends Brewing Company at 7 pm to conduct business, eat, and socialize.
2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

T175628 - Yoga
7:00 am - 7:45 am
Exhibit Hall B & C Foyer , Convention Center

Join your friends and colleagues as we jump-start our day with a renewing stretch and meditation class!

T127422 - Faculty Development Division Business Meeting
7:00 am - 8:00 am
M101AB, Convention Center

This will be our annual business meeting.

T17396 - Civil Engineering Division Business Meeting
7:00 am - 8:00 am
L100D, Convention Center

All members are welcome. The business meeting will summarize past business from 2021-2022, identify new business for the division and bring to vote any bylaw changes.

T128427 - First-Year Programs Division Business Meeting
7:00 am - 8:00 am
Regency Ballroom, Hyatt Regency

First-Year Programs Division business meeting.

T1395 - ECE Division Business Meeting
7:00 am - 8:00 am
M100E, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below. The division officers will present reports on their respective responsibilities. We will have PIC III chair, ASEE leadership, and other representatives present at the meeting to provide important updates to the ECE division membership. Location: On-Site

T145389 - Engineering Management Division Business Meeting
7:00 am - 8:00 am
M100FG, Convention Center

Please join us for the 2022 Engineering Management Division business meeting. During this time, we will review old business, elect new leaders, and discuss ways we can improve our division. We welcome all ASEE members to learn more about division.

T183432 - Engineering and Public Policy Division Business Meeting
7:00 am - 8:00 am
M100E, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below. Business meeting for the Engineering and Public Policy Division Members.

T185461 - ETD - Journal of Engineering Technology (JET) Board Meeting
7:00 am - 8:00 am
M100B, Convention Center

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
Welcome to the Journal of Engineering Technology® (JET). JET is a refereed journal published semi-annually, in spring and fall, by the Engineering Technology Division (ETD) of the American Society for Engineering Education (ASEE). The aim of JET is to provide a forum for the dissemination of original scholarly articles, as well as the review articles in all areas related to engineering technology education. The journal is indexed in Science Citation Index Expanded through Elsevier, the Applied Science & Technology Index through Ebscohost, Technology Collection through ProQuest and Ei Compendex and Engineering Village through Elsevier. The journal features a distinguished editorial board, which brings together a team of highly motivated and experienced researchers and educators. The diverse experience of the board members allows our editorial panel to lend their expertise to a broad spectrum of engineering technology subjects.

T210214 - Construction Engineering Division Technical Session 2

8:00 am - 9:30 am
102B, Convention Center

Moderators: Kimberly Grau Talley (Associate Professor), Nicholas Tymvios (Assistant Professor)

Infusing 3D Printing into Construction Management Curricula to Educate Future Workforce of its Application
Piyush Pradhananga
Mohamed Elzomor (Assistant Professor) (Florida International University)
Rubaya Rahat

Configuration and Use of Lightboard System in Online Environment: Lessons Learned During COVID 19 Pandemic
George Okere (University of Cincinnati)

Employers’ Perception of Student Employability in the Construction Management Industry using Resume Analysis and Analytic Hierarchy Process
Bilge Gokhan Celik
Yewande S Abraham (Dr) (Rochester Institute of Technology (CET))

Work-in-progress: A gamified pedagogical system for teaching construction scheduling through active exploration
Mohammad Ilbeigi

Diana Bairaktarova (Assistant Professor) (Virginia Polytechnic Institute and State University)

Changing Homework Achievement with Mechanix Pedagogy: Increasing the Efficacy of a Measurement Tool for Construction Majors
Kimberly Grau Talley (Associate Professor)
Josh Hurt (Research Engineer 1) (Georgia Institute of Technology)
Julie S Linsey (Professor)

T215243 - ERM: Teamwork makes the dream work!

8:00 am - 9:30 am
101E, Convention Center

Moderators: Bryce E. Hughes (Associate Professor), Gloria J Kim (Associate Chair)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

These authors have focused their work on teaming and teamwork! Come hear what they have learned!

Developing an Observation Protocol for Cooperative Learning
Morgan M Fong
Hongxuan Chen (University of Illinois at Urbana - Champaign)
Liia Butler (University of Illinois at Urbana - Champaign)
Geoffrey L Herman (Teaching Associate Professor)

Perceived scrum Values, Conflict Resolution Ability, and Cultural Self-Awareness in the Context of System Analysis and Design Teamwork
Aparajita Jaiswal (Graduate Research Assistant) (Purdue University at West Lafayette (PPI))
Kaushali Patel (Purdue University at West Lafayette (COE))
Devang Atul Patel (Purdue University at West Lafayette (COE))
Alejandra J. Magana (W.C. Furnas Professor in Enterprise Excellence)

Emergent Explicit Regulation in Collaborative College Science Classrooms
Pierre-Philippe Ouimet
Ying Cao (Dr.) (Oregon State University)
Tong Wan (Westminster College)

Preliminary analyses (WIP): Patterns in student response to a team communication intervention
**T215676 - ERM: Systematic Reviews!**

*8:00 am - 9:30 am*

**206, Convention Center**

**Moderators:** Bruce F. Carroll (ASSOCIATE PROFESSOR) (University of Florida), Mattox Alan Beckman (Teaching Assistant Professor)

**Speaker:** Stephanie Cutler (Assessment and Instructional Support Specialist)

These lovely authors have completed systematic reviews of various topics. Come get up to speed on the current state of the research for a variety of topics.

**Building the Case for Use of Systematic Mapping Reviews in Engineering Education Research**

Muhammad Asghar (Graduate Research Assistant)

Angela Minichiello (Assistant Professor)

**Mastery Learning in Undergraduate Engineering Courses: A Systematic Review**

Carlos Luis Perez (Arizona State University, Polytechnic campus)

Dina Verdin (Assistant Professor)

**Research on Engineering Education at K-12 Settings across Communities of Practice: A Systematic Literature Review (2009-2018)**

Ethan Geheb (Doctoral Candidate)

Asli Sezen-Barrie (Associate Professor) (University of Maine)

Karissa B Tilbury

**Work in Progress: Using Ego Network Analysis to Analyze How Engineering Education Researchers Construct Mixed Methods Designs**

David Reeping (Assistant Professor)

**Tackling Differing Motivations: A Preemptive Look at Key Findings from a Systematic Literature Review of Achievement Goal Theory in Undergraduate STEM Motivations**

Alexander V Struck Jannini

Zeynep Gonca Akdemir (Ms.)

Muhsin Menekse (Associate Professor) (Purdue University at West Lafayette (COE))

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**T215285 - Special Session: Navigating Problem Ambiguity in Engineering**

*8:00 am - 9:30 am*

**Nicollet A, Hyatt Regency**

**Speakers:** David J Therriault (Ph. D.), Elliot P. Douglas (Professor), Marah B. Berry (University of Florida), Jeremy A. Magruder Waisome (Instructional Assistant Professor), Stephanie Cutler (Assessment and Instructional Support Specialist)

Session Background and Description

What is ambiguity? That is the central question that has driven our research on problem-solving. Ambiguity has been approached in multiple ways, depending on the field of study: In terms of personal tolerance to ambiguity; multiple meanings; and complexity and indeterminacy. Surprisingly, within the field of problem solving itself, ambiguity remains largely undefined, even though it is a key aspect of understanding and successfully solving engineering problems.
T217137 - Energy Conversion and Conservation Technical Session 3: Design of Novel Energy-Related Courses and Course Materials

8:00 am - 9:30 am
102C, Convention Center

Moderators: Sandip Das, Maryam Younessi Sinaki (Cleveland State University)

Speakers: Ira Harkness (Instructional Assistant Professor) (University of Florida), Benjamin John Davis (Professor of Chemical Engineering), Kenneth Walz (Professor) (Madison Area Technical College), Saquib Ahmed (Dr) (The State University of New York, College at Buffalo)

Speakers at this session will present papers relating to the design of novel courses and course materials related to various forms of energy.

A Sustainability and Alternative Energy Course as a Bridge between Disciplines
Amanda Simson (Assistant Professor)
Benjamin John Davis (Professor of Chemical Engineering)

Development of an Introductory Nuclear Engineering Course for Non-Majors
Ira Harkness (Instructional Assistant Professor) (University of Florida)

Results of 2021 Energy Education Stakeholder Survey
Kenneth Walz (Professor) (Madison Area Technical College)
Andrew McMahan (Dept. Chair) (Central Carolina Community College)
Gabrielle P Temple (NSF CREATE Co-PI Project Manager)
Kathleen Alfano (NSF CREATE Center co-PI) (College of the Canyons)

A Holistic Implementation of Data Science in Clean Energy Engineering Education
Ilya Y. Grinberg (SUNY Distinguished Teaching Professor) (The State University of New York, College at Buffalo)
Saquib Ahmed (Dr) (The State University of New York, College at Buffalo)
Joaquin Carbonara (Professor) (The State University of New York, College at Buffalo)

T218417 - Engineering Deans Council Business Meeting

8:00 am - 9:30 am
Lakeshore B, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below EDC business breakfast meeting.

T219403 - Engineering Design Graphics Division Business Meeting

8:00 am - 9:30 am
L100D, Convention Center

All EDGD members are encouraged to attend the business meeting.

T2208 - Equity, Culture & Social Justice in Education Division Technical Session 7

8:00 am - 9:30 am
205D, Convention Center

Moderator: Madhumi Mitra (Professor)

Work in Progress: An Early Analysis of How Language Cultivates Inclusive Engineering Culture for Black Students, Faculty, and Staff
Karin Jensen (Prof.)
Tiffani Williams

WIP Developing Learning Objectives for an “Equity-Centered” Undergraduate Engineering Program
Grenmarie Agresar
John H Callewaert (Director of Strategic Projects)
Steve J. Skerlos (Arthur F. Thurnau Professor) (University of Michigan)

Asset-Based Frameworks for Engineering Student Professional Skill Development
Victoria Bill (MakerSpace Director)
Julie Martin

(Work in Progress) Examining how students critically evaluate racial bias in a medical device in a first-year computing course
T2209 - Equity, Culture & Social Justice in Education Division Technical Session 8

8:00 am - 9:30 am
205A, Convention Center

Moderator: Grenmarie Agresar

Towards a Personalized Learning Approach to Broaden Participation in Computer Science and Promote Computational Thinking
  Emmanuel Johnson
  Teresa M Ober (Assistant Research Professor)
  Philip Gonsalves
  Mayank Kakodkar (Purdue University at West Lafayette (COE))
  Janice Zdankus (Vice President, Office of CTO)

Work in Progress: A Novel Professional Development Program for Addressing Systemic Barriers to Computing Participation
  Shaundra Bryant Daily (Professor of the Practice)
  Cecilé Sadler
  Alicia Nicki Washington

Exploring the role of the physical environment in building self-efficacy in first-year African engineering students
  Heather Beem (Lecturer)

The Efficiency-Inclusion Dilemma: Reproducing Dominance Hierarchies through Efficiency Logics in Semiconductor Engineering
  Sarah Appelhans (Postdoctoral Research Assistant) (Bucknell University)

Environmentally and Socially Responsible Engineering - Assessing Student Empowerment
  Natasha Andrade (Senior Lecturer)
  Elisabeth Smela (Prof.) (University of Maryland College Park)
  Vincent Nguyen (Senior Lecturer) (University of Maryland College Park)
  Adjoa Egyen-Davis (University of Maryland College Park)
Running a Virtual Research Experience for Undergraduate (REU) Site in Computing Systems
Wei Zhang

Cloud Computing Based Plant Classifiers and Their Real-Life Research Applications
Deng Cao
Marcus Nagle (Central State University)
Rajveer Dhillon
Cadance Lowell (Professor and Chair, Agricultural Sciences and Life Sciences) (Central State University)
joshua jolly

Taking an Undergraduate Research Experience in Unmanned Aircraft Systems (UAS) Cybersecurity – Outcomes and Lessons Learned
Matthew A. Verleger (Professor of Engineering Fundamentals)
Richard Stansbury (Associate Professor) (Embry-Riddle Aeronautical University - Daytona Beach)
Mustafa Ilhan Akbas (Assistant Professor) (Embry-Riddle Aeronautical University - Daytona Beach)

Best Practices and Lessons Learned on Organizing Effective Cohort-based Undergraduate Summer Research during COVID-19
Daqing Hou
Yu Liu

T225221 - Entrepreneurship & Engineering Innovation Division Technical Session 4
8:00 am - 9:30 am
200E, Convention Center
Moderator: Keith Stanfill
Enhancing Engineering Students’ Innovation Self-Efficacy through Design of K-12 STEM Projects
Azadeh Bolhari (Associate Teaching Professor)
Shelby Joy Tillema (University of Colorado Boulder)
Analyzing Various Scoring Methods for Fill-In Concept Maps
Ethan Cartwright (Undergraduate Student) (The Ohio State University)
Meagan Eleanor Ita (Post-Doctoral Scholar)
Krista M Kecskemety (Associate Professor of Practice)
Vertically Integrating E-portfolios and Cooperative Educational Experiences to Develop Students’ Entrepreneurial Mindset
Clark Hochgraf (Associate Professor) (Rochester Institute of Technology (CET))
Jeanne Christman (Dr.) (Rochester Institute of Technology (CET))
Laura Shackelford (Professor)
Stacy Nation-Knapper (Director, American Studies) (Montana State University - Bozeman)
Daniele M. Brown (Director, Year One Programs) (Rochester Institute of Technology (CET))

Nostalgia for Virtual Routines Harness Unexpected Entrepreneurial Actions in Engineering
Barbara A. Karanian (Lecturer/ previously visiting Professor) (Stanford University)
Annika C Speer (Professor) (University of California, Riverside)
mariam salloum (University of California, Riverside)
Mona Eskandari (Professor) (University of California, Riverside)
Work in Progress: Examining Diversity, Equity, and Inclusion in Entrepreneurship Programming
Jocelyn Jackson (PhD Student)
Jesse Gilbert-Sovern (Research Assistant) (University of Michigan)
Aileen Huang-saad (Associate Professor)
Joi-lynn Mondisa (Assistant Professor)

T288229 - PCEE Session 9: Virtual Summer Programs
8:00 am - 9:30 am
103A, Convention Center
Moderator: Hoda Ehsan (Director of Quadrivium Design and Engineering ) (The Hill School)
Speakers: Gerald W. Recktenwald (Associate Professor) (Portland State University), Alison Haugh Nowariak (Graduate Student STEM Education Researcher), Carol Geary, Nael Barakat (Professor and Chair) (The University of Texas at Tyler)
The papers in this session include:
1. Evolution of an invention education summer camp as a bridge from high school to college STEM (Evaluation)
2. Shifting to a Virtual Summer STEM Program for High School Students (Evaluation)
3. An Evaluation of an Implementation of High School Girls Summer Outreach Camp Converted to an Online Format (Evaluation)
4. Changes of Project Based Learning Effectiveness due to the COVID-19 Pandemic (Evaluation)
Evolution of an invention education summer camp as a bridge from high school to college STEM (Evaluation)
Gerald W. Recktenwald (Associate Professor) (Portland State University)

Shifting to a Virtual Summer STEM Program for High School Students (Evaluation)
Alison Haugh Nowariak (Graduate Student STEM Education Researcher)
Annika Marie Gehl (Oregon State University)
Gillian Roehrig (Professor)

An Evaluation of an Implementation of High School Girls Summer Outreach Camp Converted to an Online Format (Evaluation)
Carol Geary
Tawni Paradise (Graduate Student)
Hannah Glisson (Virginia Polytechnic Institute and State University)
Kim Lester (Director Pre-college Programs) (Virginia Polytechnic Institute and State University)

Changes of Project Based Learning Effectiveness due to the COVID-19 Pandemic
Nael Barakat (Professor and Chair) (The University of Texas at Tyler)
Aziz Shekh-Abed (Lecturer)

T288379 - Commission on P-12 Engineering Education Meeting (Open to All)
8:00 am - 9:30 am
L100A, Convention Center
Speaker: Geraldine Gooding (Manager, Strategic Projects)

T227176 - Faculty Development Division Technical Session 5
8:00 am - 9:30 am
200G, Convention Center
Moderator: Michelle Soledad (Assistant Professor)
Speaker: Homero Murzi (Assistant Professor)
An Integrated Engineering Model for Advising
Darcie Christensen
Catherine Megough Spence (Assistant Professor) (Minnesota State University, Mankato)

Rob Sleezer (Associate Professor, Twin Cities Engineering)
Jodi Nelson (IRE Bell Facilitator) (Minnesota State University, Mankato)
Ryan Walerius
Rachael M Johnson (Minnesota State University, Mankato)
Rebecca A Bates (Professor & Chair)

Lessons Learned: Boosting Faculty Development Services During a Global Pandemic
Lani Draper (Instructional Designer)

Lessons Learned Adapting a First-Year-Engineering Project-Based Course to an Online Format
Juan David Ortega (Collegiate Assistant Professor) (Virginia Polytechnic Institute and State University)
Matthew James (Associate Professor of Practice)
Catherine Twyman (Instructor)
Benjamin Daniel Chambers (Associate Professor of Practice) (Virginia Polytechnic Institute and State University)
Tahsin Mahmud Chowdhury (Graduate Assistant)

People-First Engineering: A College-wide effort to shift the culture by using the socially engaged design process
Heidi M Sherick (Director of Leadership Development)
Pauline Khan (Director) (University of Michigan)
Tersha A. Pinder-grover (Director of CRLT in Engineering) (University of Michigan)
Deborah Mitchell Covington (Director of Partnerships, Outreach and Retention) (University of Michigan)

Developing a Premier Wind Turbine Technology Programs in the East Coast: A Novus Industry and Academia Collaborative Approach
Khosro A. Shirvani (Assistant Professor) (State University of New York, College of Technology at Farmingdale)
Conor Xavier Ricchetti (Mechanical Engineer) (State University of New York, College of Technology at Farmingdale)
Marjaneh Issapour (Professor) (State University of New York, College of Technology at Farmingdale)

T2284 - Putting Meat on the Bones: From Equity Talk to Reparative Research
8:00 am - 9:30 am
Convention Center
T230213 - Computers in Education 9 - Technology I

8:00 am - 9:30 am
213, Convention Center

Moderator: Steven F Barrett (Vice Provost Undergraduate Education)

This session will focus on technology innovations to enhance education.

Pacman Trainer: Classroom-Ready Deep Learning from Data to Deployment
Masao Kitamura (Loyola Marymount University)
Mandy Barrett Korpusik (Assistant Professor)
Andrew Forney (Andrew Forney, Ph.D) (Loyola Marymount University)

Students utilization of Discord Messaging Platform in an Introduction to MATLAB Course
Emily Hammond (Teaching Assistant Professor) (University at Buffalo, The State University of New York)
Jayden Mitchell (University at Buffalo, The State University of New York)
Jessica Swenson

Work in Progress: Undergraduate Courses in Quantum Computing: A Proposal based on our Experience Building a Python-based Quantum Computer Simulator
David Hoe (Associate Professor) (Loyola University Maryland)
Mary Lowe (Loyola University Maryland)
Dave Binkley (Loyola University Maryland)

Electronics – A First Course for Printed Circuit Board Design
Cheng Liu (Professor)
jian chang (Texas Instruments, Inc.)

Pedagogical Efficiency of Continuous vs. Discrete User Interaction with Computer Simulations
Gerald Sullivan (Professor) (Virginia Military Institute)
James Squire
David Feinauer

Coordinator of Science and Engineering) (Bucks County Community College), Gretchen Dietz (Graduate Assistant) (University of Florida)

Papers related to partnering and supporting the WIED community.

Retaining Diverse Groups in STEM
Melanie Villatoro (Associate professor)

An Autoethnographic Account of a Female Undergraduate Engineering Student
Kayla Julianna Kummerlen (Student)
Gretchen Dietz (Graduate Assistant) (University of Florida)

Factors identifying commitment to gender equality in a School of Engineering
Camila Zapata
Maria Elena Truyol

Building Community Understanding of Institutional Compensation Systems: An ADVANCE Partnership Project
Carol Elizabeth Marchetti (Professor) (Rochester Institute of Technology (COE))
Iris V. Rivero (Kate Gleason Professor and Department Head)
Jessica C Bennett (Assistant Vice President of STEM Education)
Gloria L. Blackwell

Collateral Damage: Investigating the Impacts of COVID on STEM Professionals with Caregiving Responsibilities
Kelli Paul
Jungsun Kim (Research Scientist) (Indiana University-Bloomington)
Amanda Diekman (Professor)
Allison Godwin (Associate Professor)
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)
Adam Maltese (Martha Lea and Bill Armstrong Chair for Teacher Education)

Lived Experiences that Influence How Women Engineering Majors Describe Themselves as Creative
Christine Michelle Delahanty (Area Coordinator of Science and Engineering) (Bucks County Community College)
Jason Silverman (Dr) (Drexel University)

T253170 - WIED: Partnering with and Supporting the WIED Community

8:00 am - 9:30 am
201, Convention Center

Moderators: Christine Michelle Delahanty (Area Coordinator of Science and Engineering) (Bucks County Community College), Gretchen Dietz (Graduate Assistant) (University of Florida)

Papers related to partnering and supporting the WIED community.

Retaining Diverse Groups in STEM
Melanie Villatoro (Associate professor)

An Autoethnographic Account of a Female Undergraduate Engineering Student
Kayla Julianna Kummerlen (Student)
Gretchen Dietz (Graduate Assistant) (University of Florida)

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Lived Experiences that Influence How Women Engineering Majors Describe Themselves as Creative
Christine Michelle Delahanty (Area Coordinator of Science and Engineering) (Bucks County Community College)
Jason Silverman (Dr) (Drexel University)
T2595 - SPONSOR TECH
SESSION: A New Hands-On Student Control System Kit with Complete Course - Presented by STMicroelectronics

8:00 am - 9:30 am
101A, Convention Center

Speakers: William Kaiser, Marco De Fazio (STMicroelectronics, Inc.)

This is a ticketed session. To add this ticket to your registration, please click the button below. William Kaiser and Marco De Fazio, Electrical and Computer Engineering Department, University of California, Los Angeles, STMicroelectronics, Geneva, Switzerland. A strong introduction to control systems has never been more urgent or rewarding, thanks to a wide range of new product development challenges—from autonomous surface and air vehicles to medical robotics. A control systems education is central to the engineering curriculum; however, it has not supported individual student hands-on design due to a lack of physical electromechanical systems. This session will introduce the Edukit system, a rotary inverted pendulum integrating precise digital motor actuator and digital sensor systems. The control system is a complete kit integrating a real-time, open-source solution operating on an STMicroelectronics STM32 processor. Straightforward MATLAB and Octave tools are provided for students to visualize and configure the real-time control system. The low-cost Edukit is now commercially available worldwide, and can be purchased and applied by individual students or used to equip instructional laboratories. Edukit also includes a fundamental breakthrough in digital actuator design that has solved a long-standing problem associated with rate-limited actuators in control systems. This provides precise linear and also programmable actuator transfer function performance. A critical capability of the Edukit system is the real-time control system workbench. This provides real-time display of system response to stimuli, as well as control system configuration. Control system characterization includes direct measurement of the critical sensitivity functions. This presentation will describe the Edukit system and a new undergraduate curriculum based on an open source system and complete set of instructional tutorials. This has been successful in course offerings for entry-level students; first introduction to control systems, as well as upper-division students with advanced control-system course experience. The new Edukit enables a complete introduction to control systems course, with a design sequence from stable to unstable plants and with Output Feedback and Full State Feedback. This presentation will demonstrate the Edukit system and describe its complete set of online tutorials, providing a full range of student guidance and development examples. It will also describe the exceptional results of remote and in-person courses in 2021 and 2022, with formal student evaluation results and the open-source guidance resources available for instructors and students.

T2604 - SPONSOR TECH
SESSION: Shifting Expectations for Engineering Education in a Post-2020 World - Student and Faculty Perspectives - Presented by McGraw Hill

8:00 am - 9:30 am
101B, Convention Center

Moderator: James Pitarresi (Professor) (State University of New York at Binghamton)
Speakers: Carlotta A Berry (Professor) (Rose-Hulman Institute of Technology), Conrad M Zapanta (Associate Department Head of Education, Teaching Professor), Joan Wawire

This is a ticketed session. To add this ticket to your registration, please click the button below. Join McGraw Hill and ASEE’s Student Division for an interactive panel discussion where faculty members and students discuss how their expectations have changed as a result of the pandemic. It’s no secret that 2020 upended and challenged most of the practices we were accustomed to following. Now that we’re returning to some semblance of normal, how do we evolve to incorporate the ideal blend of older and newer approaches? This discussion will cover everything from mental health concerns to classroom management, as well as the tension between preserving the inclusion of empathy and humanity in engineering education without unduly burdening faculty or encouraging students to take advantage of flexible policies. Get ready to tackle tough topics and to provide your own opinions and solutions!
### T2620 - Two Year Model Design Competition Poster Session
8:00 am - 9:30 am  
Exhibit Hall B & C Foyer, Convention Center

### T26277 - Chemical Engineering Division Executive Committee Meeting
8:00 am - 9:30 am  
L100B, Convention Center

### T235458 - LEES Session 9
8:00 am - 9:30 am  
101D, Convention Center
Moderator: Rider W Foley (Assistant Professor) (University of Virginia)

#### Aspirations vs. Reality in Engineering Education: An Analysis of Top-Rated Institutions and Degree Programs
Kathryn A. Neeley (Associate Professor) (University of Virginia)
Sofia Zajec (University of Virginia)
Morgan Stup (University of Virginia)

#### Measuring Students’ Interdisciplinary Competence and Entrepreneurial Mindset based upon Exposure to a Holocaust Narrative
Cayla Ritz
Cheryl A Bodnar (Associate Professor, Experiential Engineering Education)
Melissa Montalbo-lomboy (Lecturer) (Rowan University)

### T236447 - Manufacturing Workforce Development
8:00 am - 9:30 am  
102D, Convention Center
Moderators: Aditya Akundi (Assistant Professor), Zhenhua Wu (Associate Professor) (Virginia State University)

#### Trends of systems engineering job postings and their implications for curriculum development
Sergio Luna (University of Texas at El Paso)
Aditya Akundi (Assistant Professor)
Amit J Lopes
Ahmed Bahabry

#### Four Pillars of Manufacturing Knowledge Revision and Validation Process
John L. Irwin (Professor/Chair)
Michael Johnson (Professor)
Suzy Gorospes Marzano (Product Development Manager) (Society of Manufacturing Engineers)

#### Future of Work Issues for Florida Two Year Engineering Technology Program
Marilyn Barger (Dr.)
Richard Gilbert (Professor) (University of South Florida)

#### Industry Feedback Leads to an Instructional Scaffold Approach to Teaching Geometric Dimensioning
Jenifer Blacklock (Director of the Western Colorado University Partnership Program) (University of Colorado Boulder)
Greg A Vanderbeek (University of Colorado Boulder)

### T23990 - Mechanical Engineering: Statics and Dynamics
8:00 am - 9:30 am  
102A, Convention Center
Speaker: Adrian Rodriguez (Lecturer)

#### Benefits of Statics Concept Mapping in Career Cognition
Paris Madison Weber (University of Washington)
Seung-Jin Lee (University of Washington)
Heather Dillon (Professor)

#### Construction and Use of a Concept Map in an Undergraduate Dynamics Class
Natalie Wint
Mohammed Noor-A-Alam (Indiana University - Purdue University Indianapolis)
Julie Mendez (Clinical Associate Professor) (Indiana University Purdue University, Columbus)

Mohammed Noor-A-Alam (Indiana University - Purdue University Indianapolis)
Julie Mendez (Clinical Associate Professor) (Indiana University Purdue University, Columbus)

The Effects of Assessment Method for Regular, Out-of-Class, Learning on Student Performance and Content Retention in a System Dynamics Course
Louis A DiBerardino (Associate Professor of Mechanical Engineering)
Lawrence Funke (Assistant Professor) (Ohio Northern University)

A Novel Cart/Pendulum System for Teaching Dynamic Systems and Feedback Control
Ryan W Krauss (Associate Professor) (Grand Valley State University)

Enhancement of Student Learning in an Engineering Course Through Hands-on Pedagogical Approaches
A K M Monayem Hossain Mazumder (Assistant Professor) (Saginaw Valley State University)

T2402 - College Industry Partnerships Division Business Meeting
8:00 am - 9:30 am
M100HI, Convention Center
CIPD business meeting.

T240240 - Military and Veterans Division Technical Session 1
8:00 am - 9:30 am
102E, Convention Center

Hyflex for Successful Student Veteran Engineering Education: Say It Like You Mean It
Robert J. Rabb (Chair, Mechanical Engineering)
Alyson Grace Eggleston
Ronald W. Welch (Professor) (The Citadel)

Half-fulfilled Promises: Creating a Veteran-friendly Space in Engineering Graduate Programs
Jae Hoon Lim (Professor) (University of North Carolina at Charlotte)
Jerry Lynn Dahlberg (Associate Director of Aerospace and Defense) (University of Tennessee, Space Institute)
Brittany Hunt

U.S. Military Students in Civilian Undergraduate Engineering Programs: A Narrative Review of the Student Veteran and Servicemember Literature
Hannah Wilkinson
Angela Minichiello (Assistant Professor)

Understanding National Guard Engineers Enlistment Motivations and Propensity to Seek Construction Engineering Education
Janice Higuera
Angela R Bielefeldt (Professor)

T24115 - Minorities in Engineering Division Technical Session 7
8:00 am - 9:30 am
212, Convention Center

Moderators: Laura Bottomley, Carmen Lilley

The Value of Assessing, Reporting, and Discussing Culture of Inclusion (Experience)
Denise M. Driscoll (Director of Diversity and Inclusion)
Kristin Everett

Building the Corps: an HBCU+PWI Partnership to Broaden Participation in Data Science (Experience)
Kathleen Luchini Colbry (Assistant Dean, Engineering Graduate Student Services)
Dirk Joel-luchini Colbry (Research Specilest) (Michigan State University)
Marta Dark (Spelman College)
Vincent Melfi (Associate Professor) (Michigan State University)
Tiffany Renee Oliver (Dr.) (Spelman College)

Program to Assist Engineering Students with Autism Spectrum Disorder through Interdisciplinary Peer Mentorship (Experience)
Deana Delp
Maria Dixon (Arizona State University)

Spatial Language Used by Blind and Low-Vision High
School Students During a Virtual Engineering Program (Research)

Theresa Green
Daniel Kane (Utah State University)
Gary M Timko (Research Associate)
Natalie L Shaheen
Wade H Goodridge

T256235 - Assessment in Mechanics Courses

8:00 am - 9:30 am
101F, Convention Center

Moderators: Julian Ly Davis (Dr.), Adam Wood

Interested in learning more about assessment, aids in grading, specification grading, and preparing students to be successful in your classroom? You need to be here!

The accuracy of self-assessment in engineering mechanics

Amie Baisley (Faculty)
Keith D. Hjelmstad (Chair) (Arizona State University)
Efhalia Chatzieustratiou (Lecturer) (Arizona State University)

The benefits of writing machine-graded final exams to be capable of more nuanced feedback in large foundational mechanics courses.

James Lord (Collegiate Assistant Professor)

Assessment of Precision, Foundation, and Knowledge in Engineering Mechanics

Jiehong Liao
Galen Papkov
Ashraf Badir
Robert O#39;Neill (Professor) (Florida Gulf Coast University)

Work in Progress: Differentiated Learning in a Specifications Grading Framework

Robert Brown
Timothy Kennedy (Executive Director of Engineering)

Bridging FEA Theory and Practice with MATLAB Grader - Work in Progress

Michael Christopher Sevier (Assistant Professor)

T2669 - Electrical and Computer Engineering Division New Officers Orientation

8:00 am - 9:30 am
M100E, Convention Center

ECE Division New Officers Orientation - this session is only for the current ECE division executive committee and candidates or the elected new officers at the division business meeting. All members are welcome to join though.

T271279 - ASEE Fellows Breakfast

8:00 am - 9:30 am
Northstar A, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below. Annual Academy of Fellows breakfast. This event is for ASEE Fellows only.

T245220 - EMD Technical Session 1: Captstone, Ethics, and Statistical Methods

8:00 am - 9:30 am
102F, Convention Center

Hear from authors on how they are improving their senior design and classroom experiences.

Community-focused Senior Design Practicum Projects

Venkat Allada (Professor)
Clair Kueny (Missouri University of Science and Technology)

Application of Artificial Intelligence and the Cynefin Framework to establish a Statistical System Prediction and Control (SSPC) in Engineering Education.

James Jay Jaurez (Professor) (National University)
Ben D Radhakrishnan (Professor) (National University)

Virtue and Engineering Ethics - A Pilot Study

Kenneth McDonald

Multidisciplinary Capstone Design Experiences: Students’ Perspective

Cole Shannon
T275508 - Getting Involved with ASEE ABET Activities
8:00 am - 9:30 am
101C, Convention Center

T275582 - Registration
8:00 am - 5:00 pm
Exhibit Hall B & C, Convention Center

T275630 - Zone I Meeting
8:00 am - 9:30 am
M100A, Convention Center

T275631 - Zone II Meeting
8:00 am - 9:30 am
M100B, Convention Center

T275632 - Zone III Meeting
8:00 am - 9:30 am
M100C, Convention Center

T275633 - Zone IV Meeting
8:00 am - 9:30 am
M100D, Convention Center

T275647 - Campus Representative Business Meeting (to be held virtually after the conference)
8:00 am - 9:30 am
To be Held Virtually after the Conference
Annual business meeting of ASEE’s Campus Representatives. Will be held virtually after the conference.

T275652 - Come Join the ASEE Professional Services Team to Hear About Our Many Programs!
8:00 am - 9:30 am
200A, Convention Center
The Professional Services Sector at ASEE has a wealth of programs and services for our members that add value to membership. This sector includes the following departments: Academic Services, Education & Career Development, Fellowship & Research Opportunities, Institutional Research & Analytics, Innovation & Strategic Direction, Learning Services and P-12 & DEI Services, under the leadership of ASEE’s Chief Academic Officer (CAO), Dr. Jacqueline El-Sayed. Opportunities for engagement range from applying to become an ASEE Specialist consultant to engaging in ASEE’s numerous externally-funded projects, to registering for one of our professional development workshops—and many more. Please grab a cup of coffee and join us to learn more about our many programs, initiatives, and services as well as how you can get involved. Plus, meet and network with ASEE’s Professional Services sector staff and CAO. We would love to hear your ideas on current and future programming. We look forward to seeing you at this session!

T2797 - Civil Engineering Division ASCE Liaison Committee - Supporting the Development of the Next Civil Engineers
8:00 am - 9:30 am
205C, Convention Center
The purpose of the ASCE Liaison Committee’s sessions is to explore several of the key educational and professional issues of strategic importance to the civil engineering profession that are being addressed (or should be addressed) by ASCE and/or other civil engineers. This specific session outlines efforts to support the development of the next generation of engineers including training faculty in best practices around teaching, practitioners’ vs. educators’ perspectives on key instructional topics, and supporting NCEES FE examination preparation.

**Department Policy and Programs that Support NCEES FE Exam Prep in Civil and Environmental Engineering**

Rebecca E Kiriazes
Ellen Zerbe

**ASCE’s Response to the Pandemic: Execution of a Remote ExCEEd Teaching Workshop**

Kelly Salyards
Allen C Estes (Professor & Head) (California Polytechnic State University, San Luis Obispo)
Camilla M. Saviz (Professor and Chair)
Patricia Clayton (Associate Professor) (Wake Forest University)
Julian Ly Davis (Dr.)
Corinna Marie Fleischmann (CAPT) (United States Coast Guard Academy)
Tonya Lynn Nilsson (Senior Lecturer)
Pinar Omur-Ozbek (Dr.) (Colorado State University)
Fethiye Ozis (Assistant Teaching Professor)
Monica Palomo (Professor)
Carolyn M Rodak (Associate Professor) (State University of New York, Polytechnic Institute)
Cassandra Rutherford
Cristina Torres-Machi (Assistant Professor)
Dion Karean Coward
Leslie Nolen (Director, Educational Activities)

**ASCE’s Response to the Pandemic: Development of a Remote ExCEEd Teaching Workshop**

Audra Morse
Patricia Clayton (Associate Professor) (Wake Forest University)
Carolyn M Rodak (Associate Professor) (State University of New York, Polytechnic Institute)
Jacob Henschen (Teaching Assistant Professor)
Pinar Omur-Ozbek (Dr.) (Colorado State University)

**ASCE’s Response to the Pandemic: A Virtual ExCEEd Community Exchange**

Patricia Clayton (Associate Professor) (Wake Forest University)
Daniel Ivan Castaneda (Assistant Professor)
Monica Palomo (Professor)
Carolyn M Rodak (Associate Professor) (State University of New York, Polytechnic Institute)
Stacey Kulesza (Associate Professor)
Pinar Omur-Ozbek (Dr.) (Colorado State University)

**T273298 - Diversity, Inclusion, and Equity Activities in Engineering and Computer Science Classrooms: You Can Do It, We Can Help**

8:00 am - 9:30 am
Lakeshore C, Hyatt Regency

**Moderator: Meagan Pollock**

**Speakers: Rebecca A Atadero (Associate Professor) (Colorado State University), Karen E Rambo-hernandez (Associate Professor)**

The Partnership for Equity is an NSF-funded project to develop, implement, and assess new diversity, equity, and inclusion activities for undergraduate engineering and computer science courses. This workshop will provide examples of activities that have been developed through the project, share lessons learned in implementing activities at four different campuses, and lead participants through a flexible framework to develop activities that fit their unique courses and institutional contexts.
T275473 - North Midwest Section Meeting
8:00 am - 9:00 am
L100C, Convention Center

T282540 - INDUSTRY DAY: Corporate Member Council & College Industry Partnerships Networking Breakfast
8:00 am - 9:30 am
Lakeshore A, Hyatt Regency
This is a ticketed session. To add this ticket to your registration, please click the button below. INDUSTRY DAY: CMC Networking Breakfast

T285463 - ETD Executive Board
8:00 am - 9:30 am
M100FG, Convention Center
This is a ticketed session. To add this ticket to your registration, please click the button below. The Engineering Technology Division (ETD) of the American Society for Engineering Education (ASEE) 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. A number of engineering educators are also members. ETD sponsors national and regional meetings, publishes a newsletter, promotes the study of engineering technology, and publishes a journal. The Engineering Technology Division acts as a general forum for the exchange of ideas pertinent to the disciplines, administration, and industrial interests in engineering technology education.

T275282 - ASEE Bistro Sponsored by Mouser Electronics
8:45 am - 5:00 pm
Exhibit Hall B & C, Convention Center

T521 - Experimentation and Laboratory-Oriented Studies Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center
Board #Paper TitleAuthors
68 Hands-on vs simulation labs in Signals and Systems course
Cyrus Habibi (Associate Professor)
Kristen Thompson

69 Venturi Meter: Design, Simulate, and Test
Kristen Ann Thompson (Associate Professor of Engineering)
(Loras College)

T30654 - Computers in Education Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center
Moderator: Steven F Barrett (Vice Provost Undergraduate Education)
Board #TitleAuthors
27 Work in Progress: A Visualization Aid for Learning Virtual Memory Concepts
John Nestor &quot;Zheping Yin&quot;

27A Supporting Applied Technology and Engineering Students in Introductory Digital Logic Courses Using Logisim-Evolution and Basys 3
Jeritt Williams, Jaby Mohammed (Assistant Professor)
(Illinois State University)

Work in Progress: A Visualization Aid for Learning Virtual Memory Concepts
John A Nestor (Professor)
Zheping Yin (Lafayette College)

Work-in-Progress: Right out of the Gate: Supporting Applied Technology and Engineering Students in Introductory Digital Logic Courses Using Logisim-Evolution and Basys 3
Jeritt Williams
Jaby Mohammed (Assistant Professor) (Illinois State University)

T88579 - Pre-College Engineering Education Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

ASEE PCEE Division Poster Session Board Assignments
Board #Paper Title

Demystifying STEM Together: Parents as partners in making engineering more inclusive (Work in Progress, Diversity)
Ashita Bawankule
Lara Hebert (University of Illinois at Urbana - Champaign)
Rafael O Tinoco (Assistant Professor) (University of Illinois at Urbana - Champaign)
Tracy D Dace (Founder & CEO) (University of Illinois at Urbana - Champaign)

Designing Effective Student-directed Research Experiences for High School Students (Work in Progress)
Jessica Ohanian Perez (Associate Director of Education and Inclusivity)
Joe Muskin (Education coordinator) (University of Illinois at Urbana - Champaign)

High School Teachers’ Preparedness to Implement Blended e4usa+FIRST models in Underserved Communities (Work in Progress)
Steve Efe (Dr.) (Morgan State University)
Medha Dalal
Adam R Carberry (Associate Professor)
Petronella A James-okeke (Faculty (Assessment)) (Morgan State University)
David Rogers
Rachel Figard
Iseunifeoluwa Akinkugbe (Morgan State University)

Creating online supports for at home making and STEM projects during COVID-19 (Work in Progress)
Adam Maltese (Martha Lea and Bill Armstrong Chair for Teacher Education)
Kelli Paul
Amber Simpson (Assistant Professor) (State University of New York at Binghamton)
Ariel Zych (Director of Audience)

Centering and Exploring Capacity for Schools to Offer Equitable CS Education (Work in Progress)
Monica McGill (President & CEO) (CSEdResearch.org)
Angelica Thompson (Senior Education Researcher)
Leigh Ann DeLyser (Executive Director)
Luronne Vaval
Stephanie B Wortel-London (Director of Research)

Influence of Peer Perseverance on Students’ Engagement in Preschool Engineering Design Activities (Work in Progress)
Gurupriya Ramanathan (Assistant Professor of Early Childhood Education) (Salisbury University)
Sara Hagenah

Design with Code Club: An attempt to get kids learning to code while designing solutions to everyday problems (Work in Progress)
Adam Maltese (Martha Lea and Bill Armstrong Chair for Teacher Education)
Bárbara Yarza
David Oyler
Kelli Paul

Design of Engineering-related Lab Experiments to Train Future K-12 Educators in Renewable Energy (Work In Progress)
Dominic Halsmer
Hallett Hullinger (Oral Roberts University)
Josiah Kesler (Oral Roberts University)
Colin Michael Sheehan (Oral Roberts University)

Teaching Materials Science in the K12 Classroom: Food as a Building Material (Work in Progress)
Tashia Lewis
Holly M Golecki (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

Using Engineering Design Tasks to Create Indigenous Cultural and Community Connections with the Classroom for Elementary and Middle School Students (WIP, Diversity)
Frank M. Bowman
2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

2022 ASEE ANNUAL CONFERENCE
ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Bethany Jean Klemetsrud
Julie Robinson (Professor) (University of North Dakota)
Emine Ozturk

Gender Awareness in STEM Education: Perspectives from Adolescents, Teachers and Mentors in a Summer Pre-college Engineering Program (Work in Progress)
Becky H Huang (Associate Professor) (The University of Texas at San Antonio)
Mingxia Zhi
Joel Alejandro Mejia (Dr.)

The Social Dimensions of Learning: facilitating social Dynamics for a more engaged student in a K12 Pre-Engineering Program [Work in Progress]
Andrea Lorena Ortiz
Michelle H Kang
Julian Inaki Goni
Constanza Miranda (Faculty)

Creating Equitable Access to Engineering Learning for English Learners in Bilingual and Dual-Language Education (Work in Progress)
Alberto Esquinca (Associate Professor) (San Diego State University)
Idalis Villanueva (Associate Professor)

Work in Progress (WIP): Engineering Design Competition to Increase STEM Awareness Among Underrepresented Elementary School Students
Suzanne Lori Berliner Heyman (Director For Program Operations and Outreach) (New Jersey Institute of Technology)
Ashish D Borgaonkar (Assistant Professor)
Jaskirat Sodhi (Senior University Lecturer) (New Jersey Institute of Technology)

Credit that Counts: The Facilitator Model for Dual-Credit First Year Design Coursework (WIP)
Scott Thorne
Greg J Strimel (Assistant Professor, Engineering/Technology Teacher Education) (Purdue University at West Lafayette (PPI))
Nathan Mentzer (Assistant Professor) (Purdue University at West Lafayette (COE))
David Sears (Purdue University at West Lafayette (COE))

Can We Make Our Robot Play Soccer? Influence of Collaborating with Preservice Teachers and Fifth Graders on Undergraduate Engineering Students’ Learning during a Robotic Design Process (Work in Progress)
Krishnanand Kaipa (Assistant Professor) (Old Dominion University)

Jennifer Jill Kidd (Dr.)
Julia Noginova
Francisco Cima
Stacie I Ringleb (Professor) (Old Dominion University)
Orlando M Ayala (Associate Professor)
Pilar Pazos (Associate Professor) (Old Dominion University)
Kristie Gutierrez (Assistant Professor of Science Education) (Old Dominion University)
Min Jung Lee (Old Dominion University)

The Artful Craft of Improving Virtual Summer Camps in the Midst of COVID-19 (Work in Progress)
Shawna Michelle Wolf (University of Wyoming)
Hui Hu (University of Wyoming)
Andrea Carneal Burrows (Professor)
Mike Borowczak (Director Cybersecurity Education And Research Center)

The Challenge of Challenges: Virtual Engineering Design Challenges During the COVID19 Pandemic (Evaluation)
Wayne Johnson
Priya T Goeser (Professor) (Georgia Southern University)
Josiah Thomas Hacker (Georgia Southern University)
Thomas Dean Snyder (Georgia Southern University)

Professional Development Outcomes for Rural Teachers participating in a Research Experience for Teachers Program in Innovative Transportation Systems (Evaluation)
Susan Gallagher (Program Manager) (Montana State University - Bozeman)
Craig R Woolard (Professor and Head) (Montana State University - Bozeman)

Pilot Study Using a Culturally Relevant Approach toExpose Migratory High School Students to the Engineering Design Process (Work in Progress, Diversity)
Dina Verdin (Assistant Professor)
Seline Szkupinski Quiroga

The Effect of Summer Engineering Camps on Rural and Urban Students’ Interest in STEM (Work-in-Progress)
Britta Solheim (Wartburg College)
Jack Saylor Priske (Wartburg College)
Murai Musa Mahmoud (Assistant Professor) (Wartburg College)
Cristian Gerardo Allen (Assistant Professor of Mathematics) (Wartburg College)
Kurt Henry Becker (Engineering Education Professor) (Utah State University - Engineering Education)
Examining K-12 Singaporean Parents’ Engineering Awareness: An Initial Study of the Knowledge, Attitude, and Behavior (KAB) Framework (Fundamental)

Akmal Zakwan Bin Zulkifli (Nanyang Technological University)
Ibrahim H. Yeter (Post Doctoral Researcher)
Farhan Ali (Nanyang Technological University)

Coaching Teachers to Support STEAM in a Middle School Community of Practice (Work in Progress)

Joel Alejandro Mejia (Dr.)
Alberto Esquinca (Associate Professor) (San Diego State University)

Reinventing High School with a Focus on Industry-driven Design Projects and It’s Influence on Students as they Enter College “Work in progress”

Vanessa Elizabeth Santana (Purdue University at West Lafayette (PPI))
Greg J Strimel (Assistant Professor, Engineering/Technology Teacher Education) (Purdue University at West Lafayette (PPI))

The Effect of Summer Engineering Camps on Students’ Interest in STEM Based on Their Age (Work-in-Progress)

Trinity Borland (Wartburg College)
Samuel Douglas Bast
Murad Musa Mahmoud (Assistant Professor) (Wartburg College)
Cristian Gerardo Allen (Assistant Professor of Mathematics) (Wartburg College)
Kurt Henry Becker (Engineering Education Professor) (Utah State University - Engineering Education)

Understanding Impacts of Soft Robotics Project on Female Students’ Perceptions of Engineering (Work in Progress)

Elizabeth Ann McNeela (University of Illinois at Urbana - Champaign)
Thomas Tran (University of Illinois at Urbana - Champaign)
Aasiyah Adnan (University of Illinois at Urbana - Champaign)
Holly M Golecki (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)


Ibrahim H. Yeter (Post Doctoral Researcher)
Jeffrey D Radloff (Assistant Professor)

A review of research on STEM preservice teacher education (Work in Progress)

Yinqian Zhang
Jiabin Zhu

Outreach Program Evaluation through the Lens of Engineering Identity Development (Evaluation)

Jorge Ivan Rodriguez-Devora (University of Georgia)
Tyler George Harvey (Lecturer) (Clemson University)
William Ferriell
Kristin Kelly Frady (Assistant Professor) (Clemson University)
Maegan Hinson (Clemson University)
Bradley J. Putman (Professor) (Clemson University)

Development of a Hybrid Community of Practice Course Model to Prepare Pre-Service Teachers to Teach Engineering in K-12 (Work in Progress)

Betsy Chesnutt (Lecturer) (University of Tennessee at Knoxville)
Courtney June Faber (Lecturer and Research Assistant Professor)
Daniel Patrick Mountain

Development of a High School Engineering Pathways Program (Work in Progress, Diversity)

Rick Hill (Assistant Dean for Research & External Initiatives)
Jocelyn Maria Bennett Garraway (Associate Professor & Director, School Counseling) (University of Detroit Mercy)

Problem-based learning in STEM: Facilitating Diversity and Change in Pre-college Engineering Education through Online Collaborative Teacher Communities in virtual STEMLabs (Work in Progress) (Diversity)

Svend Hauekrog Christiansen (Ph.D. Fellow) (Aalborg University)
Lykke Brogaard Bertel
Bettina Dahl

**T7650 - Civil Engineering Division Poster Session**

**9:45 am - 11:15 am**

**Exhibit Hall B & C, Convention Center**

The 2022 poster session will be an exciting session with posters on a wide variety of topics from using virtual reality for instruction to things early-career civil engineers wish students and faculty knew. Other papers highlight how to incorporate sustainability, ecology, writing, industry professionals, physical construction and/or collaboration into civil engineering education.

What Early Career Civil Engineers Wish They Had Done Differently: Lessons For Students and Faculty

Sarah Grajdura
Kacey Beddoes (Project Director)
Construct First, Design Later – Evolution over the past 25 years
   Brad Wambeke (Academy Professor)

Integrating Ecology and Sustainability into Civil Engineering Design: A Civil Engineering Capstone Project
   Xi Wang (Assistant Professor) (University of Mount Union)
   Charles Tucker Cope (Case Western Reserve University)

Innovative Industry-Related Research Projects for Civil Engineering Undergraduate Students
   Mohammad Jonaidi
   Simin Nasseri (Dr)

Work in Progress: Collaborative Environments in Architecture and Civil Engineering Education – Case Study
   Miguelandres Guerra (Civil Engineering and Architecture)
   Vanessa Guerra (Assistant Professor) (University of Virginia)

Augmented and Virtual Reality Resource Infrastructure for Civil Engineering Courses
   Shinae Jang (Associate Professor in Residence, Director of Graduate Studies) (University of Connecticut)
   Pablo Aguero-Barrantes (University of Connecticut)
   Richard Christenson (University of Connecticut)

Work in Progress: Supporting Engineering Laboratory Report Writing with Modules Targeted for Instructors
   Charles Riley (Professor)
   Dave Kim (Professor and Mechanical Engineering Program Coordinator) (Washington State University-Vancouver)
   Ken Lulay (Associate Professor & Chair) (University of Portland)
   John D Lynch (Washington State University)

T55688 - Engineering Ethics Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Poster #Paper TitleAuthor62Centering Social Justice and Diverse Voices in Engineering Ethics Curricula
   Cortney Holles 63Ethics education in the quantum information science classroom: Exploring attitudes, barriers, and opportunities
   Josephine Meyer (Graduate Research Assistant) &quot;Noah D Finkelstein (Professor)&quot; &quot;Bethany Wilcox&quot;

Ethics education in the quantum information science classroom: Exploring attitudes, barriers, and opportunities
   Josephine Meyer (Graduate Research Assistant) (University of Colorado Boulder)
   Noah D Finkelstein (Professor) (University of Colorado Boulder)
   Bethany Wilcox (University of Colorado Boulder)

Centering Social Justice and Diverse Voices in Engineering Ethics Curricula
   Cortney E Holles (Teaching Professor) (Colorado School of Mines)

T77644 - Biomedical Engineering Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Work in Progress: Practically Present: Developing a novel approach to remote laboratory learning and engagement through LabMate
   Eileen Johnson (Research Associate) (University of Illinois at Urbana - Champaign)
   Karin Jensen (Prof.)

Work in Progress: Assessing Biomedical Engineering Student Engagement in Asynchronous and Synchronous Virtual Physiology Laboratory Experiences
   Karly S Franz (University of Toronto)
   Dawn M Kilkenny (University of Toronto)

WIP: A novel problem-driven learning laboratory course in which biomedical engineering students conduct experiments of their own design to answer an authentic research question
   Balakrishna S. Pai (Director of Instructional Laboratories)
   Ketki Patil (Research Technologist II) (Georgia Institute of Technology)
   Todd M. Fernandez (Lecturer) (Georgia Institute of Technology)
   Paul Benkeser (Senior Associate Chair) (Georgia Institute of Technology)
   Joseph M LeDoux (Executive Director of Learning and Training) (Georgia Institute of Technology)

Work in Progress: Remote Laboratory Delivery with an At-Home Biomechanical Kinematic Data Acquisition Method
   Ahmed Sayed

WIP: Scaffolding the Design Process for Undergraduate Biomedical Engineering Students: Towards a Self-Regulated Design Learning
   Constanza Miranda (Faculty)
   Elizabeth A Logsdon (Seniors Lecturer, Design Studio Director) (The Johns Hopkins University)
   Amadea Martino Smith (Researcher) (The Johns Hopkins Institute)
Work in Progress: A Clinical Immersion Program to Train Biomedical Engineers to Identify Unmet Health Needs in Urban Clinics
Sharon Miller (Clinical Associate Professor)
Steven Higbee (Clinical Assistant Professor) (Indiana University - Purdue University Indianapolis)

Work-in-Progress: Clinical Observation Module to Introduce Biomedical Engineering Students to Health Design Thinking Principles and Practices
Thea Pepperl

1 WIP: Developing Health Informatics Competency in Undergraduate Biomedical Engineering Students using Active Learning Approaches
Uri Feldman
George D. Ricco (Assistant Professor) (University of Indianapolis)

Work-in-Progress: Development of an Introductory Machine Learning Course in Biomedical Engineering
Pattanalporn Chalacheva (Assistant Teaching Professor) (Carnegie Mellon University)

Work in Progress: Fault-Finding in the Statistical Analysis of Scientific Research Papers to Help Reinforce and Improve Training from a Biostatistics course for Engineers
Bilal Ghosn

WIP: Utilizing the Problem-Solving Studio approach to facilitate neurophysiology learning
Sabia Zehra Abidi (Lecturer) (Rice University)
Laurel Chen (Rice University)

WIP: Use of Student-Produced Educational Videos to Promote Learning and Technical Communication
Sabia Zehra Abidi (Lecturer) (Rice University)
Laurel Chen (Rice University)
Victoria Kong
Aidan McAnena (Rice University)

WIP: Bingo! Gamification to Promote Course Community, Engagement, and Instructor Rapport in a BME Course
Rachel C Childers (Assistant Professor) (The Ohio State University)

Work in Progress: Exit Surveys as a Tool for Continuous Improvement in Biomedical Engineering Education
Brittain Sobey (Academic Advising Coordinator) (University of Texas at Austin)
Carly Eressy (University of Texas at Austin)
Margo Cousins (Senior Human Resource Coordinator) (University of Texas at Austin)

Work in Progress: Using Resume Reviews to Explore Skill Sets Valued in Biomedical Engineers by Recruiters in Industry, Healthcare, and Academia
Annie Anmeng Wang (Student) (University of Michigan)
Cassandra Sue Ellen Jamison
Jan Stegemann
Aileen Huang-saad (Associate Professor)

T27522 - Faculty Development Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Speaker: Homero Murzi (Assistant Professor)
Board #Paper TitleAuthors 70An Analysis of LGBTQ+ Courses: Recommendations for Developing Content for LGBTQ+ Individuals and Allies in AcademiaSecil Akinci-ceylan &quot;Rocio C. Chavela Guerra (Visiting Research Professor) (Rowan University)&quot; &quot;Stephanie Farrell&quot; 71Work in Progress: Continuous Professional DevelopmentEvelyn Sowells-boone (Dr.) 72Work in Progress: Creating micromoments to develop a student's entrepreneurial mindsetMegan Morin &quot;Richard Goldberg&quot; 73Work in Progress: Retention of women in engineering professoriate: A Systematic ReviewMichelle Soledad (Assistant Professor) &quot;Debarati Basu (Assistant Professor)&quot; &quot;Sreyoshi Bhaduri&quot; &quot;Lilianny Virguez (Lecturer)&quot; An Analysis of LGBTQ+ Courses: Recommendations for Developing Content for LGBTQ+ Individuals and Allies in Academia
Secil Akinci-ceylan
Rocio C. Chavela Guerra (Visiting Research Professor) (Rowan University)
Stephanie Farrell (Professor and Department Head)

Work in progress: Creating micromoments to develop a student’s entrepreneurial mindset
Megan Morin (KEEN Program Coordinator) (University of North Carolina at Chapel Hill)
Richard Goldberg (Teaching Associate Professor)

WIP - Retention of women in engineering professoriate: A Systematic Review
Michelle Soledad (Assistant Professor)
Debarati Basu (Assistant Professor)
Sreyoshi Bhaduri
Two-year College Division Model Design Competition

Objective: To design and build an autonomous robot that can successfully gather up to 12 legal-sized (yellow) fish from the three blue lakes on the track and deliver them to either of two fishing stations. The lakes also contain 4 undersized (red) fish which must be left in each lake or returned to any of the lakes. The robots will have a maximum time of 120 seconds in each of their four allotted trials. The robot must begin within an 8" x 12" x 10" high size limit but may expand to any size during a trial. An Exhibit Session will precede the robot trials.

First-Year Programs Division Poster Session

Term Design Project in Fundamentals of Engineering Course

Djedjiga Belfadel (Associate Professor)
Isaac Macwan (Assistant Professor) (Fairfield University)
Elif Kongar (Associate Dean) (Fairfield University)
John F Drazan (Assistant Professor of Biomedical Engineering) (Fairfield University)
Michael Zabinski

Mathematics Division Poster Session

Board #Paper Title Authors 77 Exploring Transfer Students Perceptions of Their Transition Experience in Calculus 2 at a Research Intensive Institution: A Phenomenological Study

Steven Edalgo, Karen High

Construction Engineering Division Poster Session

Board #Paper Title Authors 74 Term Design Project in Fundamentals of Engineering Course

Djedjiga Belfadel (Associate Professor)
Isaac Macwan (Assistant Professor) (Fairfield University)
Elif Kongar (Associate Dean) (Fairfield University)
John F Drazan (Assistant Professor of Biomedical Engineering) (Fairfield University)
Michael Zabinski
T34545 - International Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors75Understanding Academics Motivation to Engage in a Voluntary Research ProgramHomero Murzi &quot;Tahsin Chowdhury&quot; &quot;Lloyd Herbert Morris (PhD Management Sciences)&quot; 76Work-In-Progress: Liberian Undergraduate Engineering Students' Perceptions of the Impact of COVID-19 on their Learning ExperienceCollins N. Vaye (Doctoral Student) &quot;Precious Chukwuweike Eze (Mr)&quot; &quot;Bruk T Berhane (Assistant Professor of Engineering Education)&quot;

Work-In-Progress: Liberian Undergraduate Engineering Students' Perceptions of the Impact of COVID-19 on their Learning Experience
Collins N. Vaye (Doctoral Student)
Precious Chukwuweike Eze (Mr) (Florida International University)
Bruk T Berhane (Assistant Professor of Engineering Education) (Florida International University)

Understanding Academics Motivation to Engage in a Voluntary Research Program
Homero Murzi (Assistant Professor)
Tahsin Mahmud Chowdhury (Graduate Assistant)
Lloyd Herbert Morris (PhD Management Sciences)

T39555 - Mechanical Engineering: Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors80Harnessing Project Management Skills from Students Having Industry Work ExperienceMuhammad Mustafizur Rahman (Bloomfield Endowed Chair Professor) 81The Generalized Exergy Equation: A Rigorous Development and Detailed Presentation Suitable for Presentation to Advanced Undergraduates and Beginning Graduate StudentsSheldon M. Jeter (Associate Professor) (Georgia Institute of Technology) 82Work-in-Progress: Mobile Assisted Gains through Innovative Curriculum for Students in the Thermal-Fluids Science CourseMaeve Bakic (Boise State University) Krishna Pakala (Assistant Professor) Devshikha Bose (Instructional Design Consultant) (Boise State University)

A Concise Capital Investment Cost Model for Gas Turbine Systems Useful in Energy Systems Education
Sheldon M. Jeter (Associate Professor) (Georgia Institute of Technology)

Harnessing Project Management Skills from Students Having Industry Work Experience
Muhammad Mustafizur Rahman (Bloomfield Endowed Chair Professor) (Wichita State University)

Work-in-Progress: Mobile Assisted Gains through Innovative Curriculum for Students in the Thermal-Fluids Science Course
Maeve Bakic (Boise State University)
Krishna Pakala (Assistant Professor)
Diana Bairaktarova (Assistant Professor) (Virginia Polytechnic Institute and State University)
Devshikha Bose (Instructional Design Consultant) (Boise State University)

The Generalized Exergy Equation: A Rigorous Development and Detailed Presentation Suitable for Presentation to Advanced Undergraduates and Beginning Graduate Students
Sheldon M. Jeter (Associate Professor) (Georgia Institute of Technology)
T41565 - Minorities in Engineering Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors
83Creating a Community-Focused Lab Section in a Large Computer Science Course (Experience)Jule Schatz &quot;Zahra Makki&quot; &quot;Heather Rypkema&quot; &quot;John Kloosterman&quot; &quot;Elizabeth Mann Levesque (Instructional consultant)&quot; 84Creating a Virtual Learning Environment for Increasing Awareness of Blockchain Technologies at a Minority Serving InstitutionShonda L Bernadin (Associate Professor) (Florida A&amp;M University - Florida State University) Tejal Mulay (Assistant Professor) Hongmei Chi &quot;Yun Huang&quot; &quot;Rebecca Marie Reck (Teaching Associate Professor)
85Understanding the needs of students with and without disabilities for inclusive UDL-based design of Engineering courses through learning management systemsHongye Liu Deepak Moparthi Lawrence Angrave &quot;David Dalpiaz&quot; &quot;Chrysafis Vogiatzis&quot; &quot;Sujit Varadhan&quot; &quot;Yun Huang&quot; &quot;Rebecca Marie Reck (Teaching Associate Professor)
86Work-in-Progress: Inspiring Academic Engagement and Motivation of Minority College Students through Transformative Success Stories on Social Media (Work-in-Progress)Victor Manuel Garcia Diane Elisa Golding (Assistant Professor of Instruction) (University of Texas at El Paso) Karla Alejandro Ayala Mendoza Suzanne Atiya (Research Assistant) (University of Texas at El Paso)

T91660 - Design in Engineering Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Features of Continuity and Change through COVID-19 in an Undergraduate Engineering ProgramKelly Sadel Melissa Aleman Robert L. Nagel
T75525 - FOCUS ON EXHIBITS: Networking Break & ASEE Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

ASEE division posters are available for perusing during the Networking Break in the Exhibit Hall. Explore exhibit booths and see what posters the divisions have to offer! This event is complimentary for all attendees. Posters are arranged Alphabetically by Division and then by Paper Title Annual Conference Poster Session Board Assignments.

T21175 - LEAD Poster Session

9:45 am - 11:15 am
205B, Convention Center

Poster session examining issues relevant to engineering leadership development research and practice.

Work in Progress: Exploring Different Models of Mentorship Towards Developing Evidence-based Mentorship Programs
Matthew Lewis Caulfield (James Madison University)
Kyle G. Gipson (Associate Professor) (James Madison University)
Robert L. Nagel

T19685 - Engineering Design Graphics Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Board #Paper Title Authors 60 Developing the Spatial Skills of Neurodiverse Students Moved to Design Graphics Technical Session 3 Sheryl A. Sorby (Professor) &quot;Savannah Stark (PhD Student)&quot; &quot;Christina Carnahan&quot; 61 Differences in perceived stress levels and measured stress while solving spatial tests Moved to Design Graphics Technical Session 1 Gibin Raju &quot;Sheryl A. Sorby (Professor) &quot;Grace Panther (Assistant Professor)&quot; &quot;Clodagh Reid&quot; &quot;Jasmine Mogadam&quot;

Developing the Spatial Skills of Neurodiverse Students
Sheryl A. Sorby (Professor) (University of Cincinnati)
Savannah Stark (PhD Student) (University of Cincinnati)

T22689 - Engineering Libraries Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Speakers: James Thomas Mcallister (Engineering and Honors College Librarian) (University of Arkansas), Susan Wainscott (Engineering Librarian)

Board #Paper Title Authors 64 Introducing Arduino Library Kits for Checkout James Thomas Mcallister (Engineering and Honors College Librarian) (University of Arkansas) 65 More-Inclusive Practices for Science Technology Engineering and Mathematics (STEM) Library Collection Management Susan Wainscott

Susan Wainscott (Engineering Librarian)

Introducing Arduino Library Kits for Checkout
James Thomas Mcallister (Engineering and Honors College Librarian) (University of Arkansas)

T6649 - Chemical Engineering Division Poster Session

9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Poster #Title Author 16 Can the COVID-19 pandemic boost collaborative online international learning (COIL) in engineering education? â€“ A review for potential implementations Erik Vasquez &quot;Erick Ramos&quot; 17 Embedding process safety modules within core CHE courses Chris Barr &quot;Laura Hirshfield (Lecturer)&quot; 18 Teacher Impact on Student Learning Using LC-DLM Implementations in the Classroom Heidi Curtis &quot;Jacqueline Gartner (Assistant
2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Professor) 
Prashanta Dutta (Professor)
Olusola Adesope (Professor)
Bernard J. Van Wie (Professor)
Carah Elyssa Watson

19 Work-in-Progress: Implementation of a Biomedical Hands-On Learning Tool in Chemical Engineering Courses and Effects on Student Motivational and Conceptual Gains
Kitana Kaiphanliam & Bernard J. Van Wie (Professor)

Teacher Impact on Student Learning Using LC-DLM Implementations in the Classroom
Heidi Curtis (Campbell University)
Jacqueline Gartner (Assistant Professor)
Prashanta Dutta (Washington State University)
Olusola Adesope (Professor)
Bernard J. Van Wie (Professor)
Carah Elyssa Watson

Can the COVID-19 pandemic boost collaborative online international learning (COIL) in engineering education? – A review for potential implementations
Erick S. Vasquez (Associate Professor)
Erick Ramos

Work-in-Progress: Implementation of a Biomedical Hands-On Learning Tool in Chemical Engineering Courses and Effects on Student Motivational and Conceptual Gains
Kitana Kaiphanliam (PhD Candidate) (Washington State University)
Bernard J. Van Wie (Professor)
Olusola Adesope (Professor)

Work in Progress: Adapting to the changes in the teaching pedagogy post-pandemic in Electrical and Computer Engineering courses
Qudsia Tahmina (Assistant Professor)

Work-in-Progress: Skill Requirements for Electrical and Computer Engineers (ECE) Graduates in the United States: Industrial companies’ perspectives
Mohammad Al Mestiraihi (Utah State University)
Kurt Henry Becker (Engineering Education Professor) (Utah State University - Engineering Education)

Work-in-Progress: Mental Images in Studying Electromagnetism
Renjeng Su

WIP: Standards-Based Grading for Electric Circuits
Jay Wierer (Associate Professor) (Milwaukee School of Engineering)

Work-in-Progress: Problems in learning related to mathematical and graphical representations of signals
Farrah Fayyaz (Lecturer) (Concordia University)

Work-in-Progress: Enabling Secure Programming in C++ & Java through Practice Oriented Modules
Jacob Matthew Tietz (Purdue University Northwest)
Quamar Niyaz
Ahmad Javaid

Works-in-Progress: Introducing Active Learning in Semiconductor Device Course
Hansika Iroshini Sirikumara (Assistant Professor of Engineering and Physics) (Marian University)

WIP: Development of Cross-Listed Electromagnetic Compatibility Course for Future Electronic Design Experts
Yang Victoria Shao (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

WIP: A Brief Introduction of Deep Learning and IoT to...
Freshman Engineering Students
Chao Wang (Dr.) (Arizona State University)

Work in Progress: The Electric Circuit Concepts Diagnostic (ECCD)
Nathaniel Hunsu (University of Georgia)
Kun Yao (Lecturer) (University of Georgia)
Adel W. Al Weshah (Lecturer)
Olanrewaju Olaogun
Shiyu Wang (Associate Professor) (University of Georgia)

Work-in-Progress: Promoting Learning through a Prompt Feedback on Assignments and Quizzes in Peer-to-Peer Meetings with Students in Electronics I Course
Arash Takshi
Chris S Ferekides (Professor) (University of South Florida)

T72519 - Architectural Engineering Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

A Challenge-based Teaching model for Structural Analysis Courses with Strategic Industry Partners
Saul E. Crespo
Miguel X. Rodriguez-Paz (Professor, Head of Dept.) (Tecnologico de Monterrey (ITESM))
Luis Horacio Hernandez Carrasco (Ing)

T25695 - Entrepreneurship & Engineering Innovation Division Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors66From Problem to Project: An Entrepreneurial Model for a Three-Semester Multidisciplinary Capstone Sequence
Brenda Read-Daily
Tomas Estrada
Kurt DeGoede
Jean Carlos Batista Abreu (Assistant Professor) (Elizabethtown College)

Work in Progress: High School Student Training in Biomedical Engineering Innovation through Co- and Extracurricular Activities
Julia A Scott
Navid Shaghaghi
Shraddha Chaplot
Prashanth Asuri (Associate Professor)

From Problem to Project: An Entrepreneurial Model for a Three-Semester Multidisciplinary Capstone Sequence

21st Century Engineering Learning and Teaching: Malaysia Perspective and Direction
Syed Ahmad Helmi Syed Hassan "Khairiyah Mohd-Yusof” "CHIN CHIA YUAN” "Fatin Ailah Phang” "Nor Farahwahidah Abdul Rahman” "Narina A. Samah (Assoc. Prof.)” "Zaki Yamani Zakaria (Dr )” "Nurzal Effiyana binti Ghazali”

A Measure of Problem-Solving Self-Efficacy for Undergraduate Engineering Students
Jacob Marszalek "Michelle Maher (Professor)"

An Initial Investigation of Funds of Knowledge for First-Generation and Continuing-Generation Engineering Students in Singapore
Shamita V
Ibrahim H. Yeter (Post Doctoral Researcher)
Eileen Fong (Dr) (Nanyang Technological University)
Student perceptions of oral exams in undergraduate engineering classes and implications for effective oral exam design

Saharnaz Baghdadchi (Teaching Professor)
Huihui Qi
Marko Lubarda (Assistant Teaching Professor) (University of California, San Diego)
Alex M Phan (University of California, San Diego)
Nathan Delson (Professor)
Carolyn L Sandoval (Associate Director) (University of California, San Diego)

Implementing Project Based System Analysis in Introductory Engineering Thermodynamics

Jeffrey David Carvell (Assistant Professor of Physics and Engineering)

Benefits, Drawbacks, and Effects on Retention Rates to a 5 Year, Inclusive, Dual Degree Engineering Program

Jeffrey David Carvell (Assistant Professor of Physics and Engineering)
Tanja Greene

Analysis of Effect of Answering Reflection Prompts in a Computer Organization Class

Cheryl Lynn Resch (Lecturer)
Benjamin Martin Rheault (Researcher) (University of Florida)
Amy Wu (Undergraduate Student) (University of Florida)

Work in Progress: Updating End of Semester Course Evaluations via Backwards Design to Reduce Student Bias

Adam St. Jean (Associate Teaching Professor of Biomedical Engineering)
Yanfen Li (Assistant Teaching Professor)
Chiara E Ghezzi
Laura Punnett (University of Massachusetts Lowell)

21st Century Engineering Learning and Teaching: Malaysia Perspective and Direction

Syed Ahmad Helmi Syed Hassan (Associate Professor) (Universiti Teknologi Malaysia)
Khairiyah Mohd-Yusof (Professor and Fellow, Centre for Engineering Education)
CHIN CHIA CHIA YUAN (ENGINEERING EDUCATORS FOR IR 4.0)
Fatin Aliah Phang
Nor Farahwahidah Abdul Rahman
Narina A. Samah (Assoc. Prof.) (Universiti Teknologi Malaysia)
Zaki Yamani Zakaria (Dr ) (Universiti Teknologi Malaysia)
Nurzal Effiyana binti Ghazali (Universiti Teknologi Malaysia)

Team Tenure - the Longitudinal Study of Engineering Student Peer Rating Quality

Chuhan Zhou
Siqing Wei
Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education)

Work in Progress: Faculty Perceptions of Electronic Portfolios as Assessment Tools

Briana M Bouchard (Student Advisor) (Tufts University)
Kristen B Wendell (Associate Professor of Mechanical Engineering) (Tufts University)
Nicole Alexandra Batrouny (Research Assistant) (Tufts University)

Developing common qualitative tools for cross ERC education program evaluation

Zhen Zhao
Megan O’donnell (Research Professional) (Arizona State University)
Marcus Lyra
Michelle Jordan (Assistant Professor) (Arizona State University)
Wilhelmina C. Savenye (Professor Emeritus) (Arizona State University)
Gillian Roehrig (Professor)

The Characteristics of Engineering Learning in Communities of Practice: An Exploratory Multi-case Study

Liang Wang (The Secretary General)
Wei Zhang (Institute of Science Technology and Education Policy Zhejiang University) (Zhejiang University)
binbin shao

A Measure of Problem-Solving Self-Efficacy for Undergraduate Engineering Students

Jacob Marszalek (University of Missouri - Kansas City)
Michelle Maher (Professor) (University of Missouri - Kansas City)

Exploring engineering students’ critical consciousness using an ill-structured, project-based learning unit in an engineering mechanics course

Daniel Ivan Castaneda (Assistant Professor)
Joi Merritt (Associate Professor) (James Madison University)
Joel Alejandro Mejia (Dr.)

Knowledge-Building Approach to Address Societal Grand Challenge in Large-Enrollment Introductory Materials Science and Engineering Course

Lotanna Longinus Ezeonu (Mr)
Wei Li
Gail P Baxter (Co-Director CIESE)
Feedback Matters: Self-and-Peer Assessment Made Better with Instructional Interventions
Wanju Huang (Clinical Assistant Professor) (Purdue University at West Lafayette (COE))
Ryan Wynkoop
Marisa Exter (Dr.) (Purdue University at West Lafayette (COE))
Frederick C Berry (Professor, School of Engineering Technology) (Purdue University at West Lafayette (PPI))

 Comparison of Unique Co-curricular Engagement of Engineering Students and Self-reported Outcomes
Bahar Memarian (Postdoctoral Researcher)
Andrew Olewnik (Assistant Professor)

Work-In-Progress: Exploring the wellness perceptions of engineering and science faculty
Matilde Luz Sanchez-pena (Assistant Professor)
Julianna Gesun

Work-in-Progress: A Scoping Review for Gamification in Construction Engineering
Mohammad Ilbeigi
Diana Bairaktarova (Assistant Professor) (Virginia Polytechnic Institute and State University)
Azita Morteza (Stevens Institute of Technology (School of Engineering and Science))

Work in Progress: How a Mixed Experience Learning Assistant Seminar Functions as a Community of Practice
Isabella Stuopis (Research Assistant)
Kristen B Wendell (Associate Professor of Mechanical Engineering) (Tufts University)

Lessons learned from designing an effective online course with Community of Inquiry framework
Yilin Feng (Assistant Professor) (California State University, Los Angeles)

Work in Progress: Visual Learning and Teaching Aids for Abstract Concepts in Inventory Control towards Better Learning Outcomes
K. Jo Min (Associate Professor) (Iowa State University of Science and Technology)
John Jackman (Associate Professor) (Iowa State University of Science and Technology)
Zhuoyi Zhao

Work-in-Progress: Using Latent Dirichlet Allocation to uncover themes in student comments from peer evaluations of teamwork
Gaurav Nanda (Assistant Professor)
Siqing Wei
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)
Christopher Greg Brinton (Purdue University at West Lafayette (COE))
Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education)

Work-in-Progress: Balancing It All: Using Photovoice to Visualize Second-Year Engineering Student Experiences
Joan Wawire
Brian McGowan (Associate Professor) (American University)
Le Shorn Benjamin
Kristin L Schaefer (PhD Candidate)
Jerrod A Henderson (Assistant Professor)

Assessing Engineering Students’ Embodied Knowledge of Torsional Loading Through Gesture
Matthew M Grondin (Research Assistant)
Michael I. Swart (Researcher) (University of Wisconsin - Milwaukee)
Fangli Xia (University of Wisconsin - Madison)
Mitchell Nathan (Professor) (University of Wisconsin - Madison)

Understanding the Effectiveness of Online Engineering Education in the Time of COVID-19
Il-Seop Shin (Associate Professor) (Western Illinois University)
Eun Go (Dr.) (Western Illinois University)

Student Experience is User Experience: Understanding Student Experience through the MPRC
James Pembridge

From a Mentor’s Perspective: Discovering Factors that Foster Achievement Motivation in Engineering
Alexandra Lee
Garam A. Lee (Michigan State University)
John Keane (Michigan State University)
Goun Choi (Michigan State University)
S. Patrick Walton (Associate Professor) (Michigan State University)
Lisa Linnenbrink-garcia (Professor) (Michigan State University)

Conducting a Diversity, Equity, and Inclusion Climate Survey of Engineering within a Large Texas University
Nikhith Kalkunte (University of Texas at Austin)
Lindsey McGowan (North Carolina State University at Raleigh)
Madiha Qasim (North Carolina State University at Raleigh)
Maura Borrego (Professor, Department of Mechanical Engineering, Cockrell School of Engineering Professor, STEM Educ) (University of Texas at Austin)

Development of a Survey Instrument for Measuring

2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

Affective Pathways
- Emma Treadway (Assistant Professor)
- Jessica Swenson
- Melissa Joan Caserto (University at Buffalo, The State University of New York)

- Jameka Wiggins (Graduate Researcher)
- Amanda Johnston
- Kerrie A Douglas (Assistant Professor of Engineering Education)
- Julie Martin

Work In Progress: Beyond Textbook: An Open Educational Resource Platform that Generates Course-Specific E-Textbooks
- Barney Wei (University of Toronto)
- Mingyu Zheng (University of Toronto)
- Mohammadreza Karamsoltani (University of Toronto)
- RUI ZENG (University of Toronto)
- Hamid Timorabadi

T75703 - Exhibit Hall
9:45 am - 6:00 pm
Exhibit Hall B & C, Convention Center

T82497 - TUESDAY PLENARY
11:30 am - 1:00 pm
Ballroom A, Convention Center

Moderator: Jenna P. Carpenter (Dean of Engineering) (Campbell University)
Speaker: Bina Venkataraman

Join friends and colleagues at this special session moderated by ASEE President-Elect Jenna P. Carpenter featuring the Corporate Member Council’s keynote speaker, winners of the best overall PIC, Zone, and Diversity, Equity Inclusion papers, and ASEE’s 2022 Outstanding Teaching Award recipient.

Keynote Speaker: Bina Venkataraman

Bina Venkataraman is an American journalist, author, and science and technology policy expert. She currently is an editor-at-large for the Boston Globe, where she served as editorial page editor from 2019 to 2022, and a fellow at New America. Since 2011, she has taught in the Program on Science, Technology, and Society at MIT. She formerly served as senior adviser for climate change innovation in the Obama White House, directed global policy initiatives at the Broad Institute of MIT and Harvard, and reported on the science desks of the New York Times and Boston Globe.

Venkataraman is an alumna of Brown University and the Harvard Kennedy School. In her keynote speech, Venkataraman will address a pivotal question of our time: How can we secure our future and do right by future generations? She aims to parse the mistakes we make when imagining the future of our lives, businesses, and communities, revealing how we can reclaim our innate foresight.

Best PIC I and Best Overall Paper Winner:“A New Way of Seeing”: Engagement with Women’s and Gender Studies Fosters Engineering Identity Formation
- Dr. Jenn Stroud Rossmann, Lafayette College
- Prof. Mary A. Armstrong, Lafayette College

2021 Best Zone I and Best Overall Zone Paper Winner
A Study of Available Time for Engineering Undergraduates’ Involvement in Co-curricular Activities
- Sreeram Kashyap
- Dr. Andrew Olewnik, University at Buffalo, the State University of New York

2021 Best Diversity, Equity, and Inclusion Paper Winner
The Politics of Citation Practices in Engineering Education: A Citation Network Analysis of Intersectionality
- Dr. Kristen Moore, University at Buffalo, The State University of New York
- Dr. Nathan R. Johnson
- Rev. Walter R. Hargrove

Outstanding Teaching Award
- Paul Nissenson, Cal Poly Pomona

T35510 - Olmsted Awardee Conversation
11:30 am - 1:00 pm

Moderator: Juan C. Lucena (Professor)
Speakers: Amy Slaton, Dean Nieusma (Associate Professor and Director), Alice Pawley (Professor), Sean Ferguson, Justin L Hess (Assistant Professor)
Olmsted Awardee Conversation Panelists and previous awardees of the divisions highest honor: Amy Slaton, Alice Pawley, and Dean Nieusma. Moderators: Juan Lucena Justin Hess

**S492312 - ASEE Executive Committee Meeting and Lunch**

12:00 pm - 2:00 pm

Regency Ballroom, Hyatt Regency

Join ELOS for a highly interactive session in which speakers will share and demonstrate some of their best new experiments.

**BYOE: Energy Loss in Pipe Systems (iRL)**
- Eliza A Banu (Lecturer) (University of Georgia)
- Dominik May

**BYOE - DIY Handheld Video Game Console**
- Iftekhar Ibne Basith (Assistant Professor) (Sam Houston State University)
- Paul Aden Paschal

**BYOE: A Flywheel fit for the 21st Century**
- Mark Trudgen
- Dominik May
- Parker Andrew Ensing (Research Assistant)

**BYOE: Advancing Petroleum Engineering Undergraduate Education Using Visualization Labs**
- Talal D. Gamadi
- Marshall Watson (Professor & Chair) (Texas Tech University)

**T75616 - ASEE Officer Feedback Session on New BASS App**

1:00 pm - 1:45 pm

Ballroom A, Convention Center

ASEE officer feedback session on new BASS app. Open to officers of divisions, councils, committees, commissions, and zones.

**T22615 - Panel - Technical Standards: Critical Components of Engineering Librarianship**

1:15 pm - 2:45 pm

Over the past ten years, teaching with technical standards has gained interest from engineering faculty and librarians to prepare students for a career after academia and meet accreditation requirements. In addition, technical standards are used in many fields, including interdisciplinary studies, by student teams with varying backgrounds. This session will introduce participants to the upcoming title, “Technical Standards: Information Literacy and Collection Resources for Librarians and Educators” and provide participants with ideas/skills related to the following topics: instruction, collection development, accreditation, and outreach. This session is for librarians and faculty at all levels, and there will be time included in the session for small table discussions after the presentation by the panelists.

**T18482 - ASEE Diversity Recognition Program (ADRP) Information Session (Open to all)**

1:45 pm - 3:15 pm

Lakeshore A, Hyatt Regency

**T1072 - Construction Engineering Division Technical Session 1**

1:45 pm - 3:15 pm

M101C, Convention Center

Moderators: Rachel Mosier (Associate Professor), Nicholas Tymvios (Assistant Professor)

Preparing Students for Construction Management Technology Curriculum

- Kirk Hochstatter (University of Washington)
- Alireza Borhani (University of Washington)
- Lucky Pratama (University of Washington)
- Bijesh Kumar Gautam (University of Washington)
- Ahmed Abdel Aziz (Associate Professor)
- Hyun Woo Lee (Associate Professor) (University of Washington)
Sanaz Saeidi
Carrie S Dossick (Professor and Associate Dean) (University of Washington)

A STEP TOWARDS NURTURING EQUITABLE AND SUSTAINABLE INFRASTRUCTURE SYSTEMS

Mohamed Elzomor (Assistant Professor) (Florida International University)
Rubaya Rahat
Piyush Pradhananga
Claudia Calle Müller (Florida International University)

Influences of Social Relationship Development Activities on Students’ Grades in Construction Engineering and Management Education: A Statistical Analysis

Seong Jin Kim (Dr) (Minnesota State University, Mankato)
Namhun Lee (Professor) (Central Connecticut State University)

Student Perceptions of Bias in University Construction Programs

Rachel Mosier (Associate Professor)
Heather N Yates (Associate Professor & Program Coordinator) (Oklahoma State University)
Sanjeev Adhikari (Dr.) (Kennesaw State University)
Amy Lewis (Assistant Professor) (Oklahoma State University)
Irish L Horsey (Interim Department Chair and Assistant Professor) (Kennesaw State University)

INCORPORATING A RESILIENT INFRASTRUCTURE DESIGN STRATEGY, SAFE-TO-FAIL, INTO ARCHITECTURE/ENGINEERING/CONSTRUCTION (AEC) CURRICULA

Rubaya Rahat
Piyush Pradhananga
Claudia Calle Müller (Florida International University)
Mohamed Elzomor (Assistant Professor) (Florida International University)

T15134 - ERM: New Research Methods and Tools

1:45 pm - 3:15 pm
101E, Convention Center

Moderators: Vignesh Subbian (Assistant Professor) (The University of Arizona), Euan Lindsay
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Learn about some innovative research approaches, methods, and tools - like new instruments for data collection.

Exploring the Exploratory Factor Analysis: Comparisons and Insights from Applying Five Procedures to Determining EFA Item Retention

Joseph Francis Mirabelli (Graduate Assistant) (University of Illinois at Urbana - Champaign)
Karim Jensen (Prof.)
Sara Rose Vohra
Eileen Johnson (Research Associate) (University of Illinois at Urbana - Champaign)

Qualitative Engineering Education Researchers and our Relationships with Data: Exploring our Epistemologies and Values as a Community

Nadia N. Kellam (Associate Professor)
Madeleine Jennings (Student) (Arizona State University, Polytechnic Campus)

Understanding Research on Engineering Students’ Experiences and Outcomes from Student Development Perspectives

Qin Liu (Senior Research Associate) (University of Toronto)
Joanna Meihui Li
Jenifer Hossain (University of Toronto)

Audio Dissemination for Qualitative and Broadening Participation Research: Lessons Learned and Future Possibilities

Stephen Secules (Assistant Professor)
Maimuna Begum Kali
Cassandra J McCall (Dr.)

Research Paper: Development and Validation of a Depoliticization in Engineering Scale

Trevion Henderson

T15185 - ERM: Conceptualizations of Engineering and Engineering Education

1:45 pm - 3:15 pm
M100J, Convention Center

Moderators: Matthew Ford, Adam R Carberry (Associate Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Come hear about how students and industry professionals conceptualize engineering and how history conceptualizes engineering education.

Culture and the development of a unique sub-system for
the education for engineers in the UK: A historical study. Part 2. Its accidental evaluation.

John Heywood


John Heywood

Understanding the Situated Workplace Practices and Habits of Engineers Using Agile Ethnography

Theresa Green
Angela Minichiello (Assistant Professor)
Amy Wilson-lopez (Associate Professor)

What Most Facilitates Thriving for Undergraduate Engineering Students? A Rank Order Investigation of Engineering Experts

Julianna Gesun
Julia Rizzo

Conceptualizing First Principles Thinking in Engineering Education

Kimia Moozeh

Lisa Romkey (Associate Professor, Teaching Stream) (University of Toronto)

Nikita Dawe

Identifying curriculum factors that facilitate lifelong learning in alumni career trajectories: Stage 1 of a sequential mixed-methods study

Nikita Dawe
Amy Bilton
Kimia Moozeh

Lisa Romkey (Associate Professor, Teaching Stream) (University of Toronto)

T434 - Business meeting of the TELPhE Division

1:45 pm - 3:15 pm

M100HI, Convention Center

Business meeting of the Tech and Engineering, Literacy/Philosophy of Engineering Division.

T48430 - Student Division Business Meeting

1:45 pm - 3:15 pm

L100B, Convention Center

Student Division Business Meeting

T15186 - ERM: Instruction and Engagement

1:45 pm - 3:15 pm

Nicollet A, Hyatt Regency

Moderators: Amanda Johnston, Cory Brozina (Assistant Professor and Director of First Year Engineering)

Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

These authors/presenters have innovative instructional practices or have recently completed research focused on student engagement. Two things we can all get excited about! Come hear what they’ve been up to!

Flipped Instructional Design Factors in an Introductory and an Advanced Data Science Course

Shamima Mithun (Ms) (Indiana University - Purdue University Indianapolis)

A Reflection on Action Approach to Teamwork Facilitation

Aparajita Jaiswal (Graduate Research Assistant) (Purdue University at West Lafayette (PPI))

Devang Atul Patel (Purdue University at West Lafayette (COE))

Yi Zhu (Purdue University at West Lafayette (COE))

Jin Su Lee (Purdue University at West Lafayette (COE))

Alejandra J. Magana (W.C. Furnas Professor in Enterprise Excellence)

Orchestrating a culture-aligned adoption and adaptation of an instructional innovation: A story of an engineering professor’s pedagogical decisions between innovation and school culture

Yonghee Lee (Postdoctoral Researcher)

David Allen Evenhouse (Postdoctoral Research Associate)

Edward J. Berger (Professor) (Purdue University at West Lafayette (COE))

Jeffrey F Rhoads (Director/Professor) (Purdue University at West Lafayette (COE))

Jennifer Deboer (Assistant Professor of Engineering Education) (Purdue University at West Lafayette (COE))

Benefits of Video Tutorials for a Computer Aided Design Class

Gerald Prendergast (Assistant Professor of Engineering)

Student performance, engagement, and satisfaction in a flipped Statics and Mechanics of Materials classroom: A Case Study

Rachel H Sangree (Associate Teaching Professor)
Improving learning experience and student engagement in a Mathematics Course through real time interactive presentations and anonymous collaboration

Gibrán Sayeg-Sánchez (Tecnologico de Monterrey (ITESM))
Miguel X. Rodriguez-Paz (Professor, Head of Dept.) (Tecnologico de Monterrey (ITESM))
Cecilia Cancino Nuñez (Tecnologico de Monterrey (ITESM))

**T17411 - Business Meeting for the Energy Conversion, Conservation, and Nuclear Engineering Division (ECCNED)**

1:45 pm - 3:15 pm
L100D, Convention Center

Business Meeting for the Energy Conversion, Conservation, and Nuclear Engineering Division (ECCNED)

**T18 - Equity, Culture, & Social Justice in Education Division Technical Session 9**

1:45 pm - 3:15 pm
102E, Convention Center

**Moderator: Jerry Austin Yang (Student)**

*Beyond Selecting a Methodology: Discussing Research Quality, Ethical, and Equity Considerations in Qualitative Engineering Education Research*

Malini Josiam (Student)
Taylor Johnson (Virginia Polytechnic Institute and State University)
Crystal M Pee (Student-Chemical Engineering)
Janice Leshay Hall (Virginia Polytechnic Institute and State University)
Walter C. Lee (Associate Professor)

*Student Responses to a Gender-Neutral Engineering Ethics Case Study*

Charles Riley (Professor)
Franny Technology Howes (Assistant Professor) (Oregon Institute of Technology)
Yasha Rohwer (Associate Professor) (Oregon Institute of Technology)

*Designed to Disrupt: A Novel Course for Improving the Cultural Competence of Undergraduate Computing Students*

Alicia Nicki Washington

*Novel multimodal framework for embedding social justice education in technical engineering coursework*

Ingrid Scheel (Project Instructor)
Gail Verdi (Associate Professor) (Kean University)
Lara Letaw (Oregon State University)

*Using Natural Language Processing to Explore Undergraduate Students’ Perspectives of Social Class, Gender, and Race*

Umair Shakir (Graduate Research Assistant) (Virginia Polytechnic Institute and State University)
Sarah Ovink (Associate Professor of Sociology) (Virginia Polytechnic Institute and State University)
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)

**T21174 - LEAD Tech Session #2: Assessing and Evaluating Engineering Leadership Development.**

1:45 pm - 3:15 pm
200I, Convention Center

The papers presented in our second LEAD technical session explore and assess engineering leadership programs dedicated to mentorship, career pathways, interdisciplinary EL education, and curricular integration of leadership in engineering.

**Integrating Technical Leadership and Communications Programs at MIT: Challenges and Opportunities**

Olivier Ladislas de Weck (Apollo Program Professor of Astronautics and Engineering Systems)
Reza S Rahaman (Industry Co-Director, Gordon Engineering Leadership Program)
Joel Schindall

**Analyzing Students’ Perceptions of Engineering Leadership Skills Trainings through Guest Lectures in a Capstone Course**

Edward Latorre-Navarro
Elizabeth Louise Meier (University of Florida)

**Assessing Impact of the Leadership Development Program**
during the COVID-19 Pandemic
Bruce DeRuntz (Director of Leadership Development)
Tom Withee
Harvey Henson (Dr.)

How Undergraduate Students Prepare to Become Engineers: The Role of Out-of-class Activities in Civil Engineering Students’ Career Preparation and Leadership Development
Elizabeth Volpe
Madeline Polmear (Dr.)
Denise Rutledge Simmons (Associate Professor) (University of Florida)
Danielle Marie Weisenfeld (University of Florida)
Jackson Carcaba (University of Florida)

Work In Progress: Developing an Instrument to Measure Mentoring Experience’s Impact on Leadership Development among Engineering Graduate Student Mentors
Zhen Zhao
Adam R Carberry (Associate Professor)
Samantha Ruth Brunhaver (Assistant Professor)

213, Convention Center
Moderator: Sunay Palsole (Assistant Vice Chancellor for Engineering Remote Education) (Texas A&M University)
This session will be one of two sessions dealing with papers related to online and distributed learning.

Work-in-Progress: A Review of the Type, Breadth, and Limitations of Publicly Available Educational Technology Products in 2022
Robert M Nickel
Stewart Thomas (Assistant Professor) (Bucknell University)
Sarah Appelhans (Postdoctoral Research Assistant) (Bucknell University)
Rebecca Thomas (Adjunct Professor) (Bucknell University)
Stu Thompson (Associate Professor and Department Chair) (Bucknell University)

An Analytic Comparison of Student-Scheduled and Instructor-Scheduled Collaborative Learning in Online Contexts
Geoffrey L Herman (Teaching Associate Professor)
Yucheng Jiang
Yueqi Jiang (University of Illinois at Urbana - Champaign)
Seth Poulsen (University of Illinois at Urbana - Champaign)
Matthew West (Prof.) (University of Illinois at Urbana - Champaign)
Mariana Silva (Teaching Associate Professor)

Understanding and Promoting Earnest Completion in Online Textbooks
Chelsea Gordon
Frank Vahid (Professor) (University of California, Riverside)
Roman Lysecky (Professor) (The University of Arizona)

Andromeda in the Classroom: Collaborative Data Analysis for 8th Grade Engineering Design
Mia Taylor (Virginia Polytechnic Institute and State University)
Leanna House (Virginia Polytechnic Institute and State University)

Academic Help Seeking Patterns in Introductory Computer Science Courses
Lina Battestilli (Teaching Associate Professor)
Matthew Stephen Zahn (North Carolina State University at Raleigh)
Sarah Heckman (Teaching Professor) (North Carolina State University at Raleigh)

Application of Internet of Things in Online Robotics Class
Zhou Zhang (Dr.) (New York City College of Technology)
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Yizhe Chang
Andy Zhang (Professor) (New York City College of Technology)

T31645 - Business Meeting: Industrial Engineering Division
1:45 pm - 3:15 pm
L100C, Convention Center

T250 - Electrical and Computer Engineering Laboratory and SoC Developments
1:45 pm - 3:15 pm
202, Convention Center

Moderators: Kumar Yelamarthi (Associate Dean for Academic Affairs), Kanti Prasad (Professor)

T2517 - Aerospace Panel Session: New Technologies and the Future of Aerospace Education
1:45 pm - 3:15 pm
207, Convention Center

New industries such as commercial space and unmanned aerial systems are growing and adding complexity to the aerospace industry. How will these changes affect engineering technology in post-secondary or certification programs, or aerospace engineering, over the next 5 to 10 years? How will these programs evolve to prepare the future workforce? How can educators increase retention and diversity to meet the needs of the future workforce?

T29485 - Exploring Graduate Mentoring: Terms, Tools, and Tackling Difficult Conversations
1:45 pm - 3:15 pm
Lakeshore B, Hyatt Regency

T623 - UEC Technical Session
Successful Techniques for Getting Students Out of the COVID Funk
1:45 pm - 3:15 pm
205D, Convention Center

Speakers: Melissa Ingabire, William Howell (student), Shivangi Pandey (student), Juma Waganda (student), Ben Koch, Don H Weinkauf (Dean)

Higher Education saw a once-in-a-lifetime disruption during the pandemic over the past two years. Yet while most of the COVID-related restrictions have been lifted on many campuses, there is a clear perception among faculty and staff that students are stuck in a COVID “funk” and are not engaging in the same way they did prior to the pandemic. In this session, you will hear from a panel of students and staff about their experiences through the pandemic, and about what has worked (and what hasn’t) to help them to
fully engage again on their campuses.

**T6391 - Chemical Engineering Division Business Meeting**

1:45 pm - 3:15 pm  
Regency Ballroom, Hyatt Regency

**T600 - SPONSOR TECH SESSION: Presented by McGraw Hill**

9:45 am - 7:00 pm  
101B, Convention Center

**T609 - SPONSOR TECH SESSION: Using the FE Exam for Effective Outcomes Assessment - Presented by NCEES**

1:45 pm - 3:15 pm  
101A, Convention Center  
Speakers: Bobby Crawford (Professor of Mechanical Engineering) (Quinnipiac University), John W. Steadman (Dean Emeritus)

This is a ticketed session. To add this ticket to your registration, please click the button below. Speakers: Grant Crawford, Ph.D., P.E., F.ASEE John W. Steadman, Ph.D., P.E., F.ASEE  
This session highlights best practices in outcomes assessment using the NCEES Subject Matter Reports to provide participants with information about the strengths and weaknesses of a program’s students. The presentation will specifically focus on using FE exam results as one tool in assessing ABET student outcomes. Attend and learn more about how the FE exam can be an effective tool for your program.

**103B, Convention Center**

Following the presentations, the 2022 Early Achievement in Engineering Education Award of the Biological and Agricultural Engineering Division of ASEE will be presented.

**Statewide Agricultural Biosecurity Curriculum for High School Students**

Iftekhar Ibne Basith (Assistant Professor) (Sam Houston State University)  
Doug Ullrich (Sam Houston State University)  
Richard Kirby Ford (Sam Houston State University)  
Ashley Morgan-olvera (Research Director: Texas Invasives)  
Devyn Charles Matthews  
Jacob Brandon (Sam Houston State University)

**Prairie Protector: Systems thinking and STEM-informed decision-making in agroecosystems through game-based learning**

Erin Ingram (Community Engagement Coordinator) (University of Nebraska - Lincoln)  
Jenny Keshwani  
Deepak R Keshwani (Associate Professor of Biological Systems Engineering)  
JORDAN M BINFIELD

**Students’ Metacognitive Strategies Revealed Through Reflections on Their Learning of Process Engineering Concepts and Skills**

Anu Singh (Student)  
Heidi A. Diefes-Dux (Professor)

**T7322 - Exploring Connections Between Academia and Practice**

1:45 pm - 3:15 pm  
200E, Convention Center  
Moderators: Jennifer Retherford (Distinguished Lecturer), Paul A. Leidig

This engaging panel discussion will include four civil engineering practitioners discussing connections between academia and practice. Panel members: Lisa Cherney, Ali Ling, Daniel Murphey and Sean Swartz, have diverse backgrounds and experiences to draw from and will respond to session attendees’ questions related to improving the relationship between academic programs and industry. Topics may include, but are not limited to, ASCE student chapters, senior design project mentors, and professional practice course development.
T69 - College Industry Partnerships Division Technical Session 1

1:45 pm - 3:15 pm
203, Convention Center

Moderator: Mahesh Chand Aggarwal (Professor) (Gannon University)

How Do Engineering Application-oriented Universities Positioning And Strategizing with External Actors? A Relational Dynamics Perspective

Yingying Qiao
Guangpei Chen

Best Practices in Building Relationships and Partnerships Between Community Colleges, Universities, and Organizations (Work In Progress)

Vibhasri Davuluri (University of Michigan)
Vibhavari Vempala
Joi-lynn Mondisa (Assistant Professor)

Lessons Learned from Collaborative Initialization of Machine Learning Class and STEM Contest with University and Industry Partnership

Hoo Kim

The Third Path: a New Approach to Industry-based Undergraduate Engineering and Technical Education in the United States.

Darrell K. Kleinke (Director of Graduate Professional Programs) (University of Detroit Mercy)
Shuvra Das (Professor)

T2639 - Environmental Engineering Division Technical Session 3

1:45 pm - 3:15 pm
209, Convention Center

Moderator: Shannon Parks

Speakers: Benjamin Michael Wallen (LTC) (United States Military Academy), Madhumi Mitra (Professor), Cheyu Lin (Carnegie Mellon University), Chelsea Q Linvill (CPT)

Third Technical session for the Environmental Engineering Division with the following talks:1. Integrating Impacts of Covid-19 Pandemic on air Quality in STEM Courses and Internships for Undergraduate Students2. Enhancing Undergraduate Students’ Sensing and Data-informed Decision-making Through a Smart Cities Project3. Effectiveness of a Hyflex Teaching Pedagogy in Environmental Engineering Education on Student Performance and Course Outcomes4. Framework for Defining and Mapping to Key Words in ABET Engineering Accreditation Commission Student Outcomes 1 – 7

Integrating “Impacts of Covid-19 pandemic on air quality” in STEM courses and internships for undergraduate students

Madhumi Mitra (Professor)
Abhijit Nagchaudhuri (Professor)
Will Klein

Enhancing undergraduate students’ sensing and data-informed decision-making through a smart cities project

Joe Dallas Moore (Instructor) (Carnegie Mellon University)
Cheyu Lin (Carnegie Mellon University)
Katherine Ann Flanigan (Carnegie Mellon University)

Effectiveness of a Hyflex Teaching Pedagogy in Environmental Engineering Education on Student Performance and Course Outcomes

Chelsea Q Linvill (CPT)
Benjamin Michael Wallen (LTC) (United States Military Academy)

Framework for Defining and Mapping to Key Words in ABET Engineering Accreditation Commission Student Outcomes 1 – 7

Andrew Ross Pfluger (Associate Professor) (United States Military Academy)
Michael A. Butkus (Professor of Environmental Engineering) (United States Military Academy)

T25388 - ENT Business Meeting

1:45 pm - 3:15 pm
L100A, Convention Center

Speakers: Jason Forsyth (Associate Professor of Engineering), Sandra Furnbach Clavijo (Director of Core Education)

Business Meeting for the Entrepreneurship & Engineering Innovation Division.
Benjamin Michael Wallen (LTC) (United States Military Academy)

T27241 - Faculty Development Division Technical Session 3

1:45 pm - 3:15 pm
101C, Convention Center

Moderators: Harsh Jhaveri, Pamela Bilo Thomas

Improving First-Year Petroleum Engineering Students Experience Through First Common Year Curriculum
Talal D. Gamadi
Marshall Watson (Professor & Chair) (Texas Tech University)

Balancing the Disciplines--Recalibrated
Jonathan Aurand (Associate Professor)
Peter Walls

Exploring the pathways: Using transition theory to understand the strategies undergraduate computing students leverage as transfer students
Jasmine Skye Batten
Alexandra Coso Strong (Florida International University)
Monique S. Ross (Assistant Professor) (Florida International University)
Elodie Billionniere
Myrian Vidal Herlle

Predicting learning outcome in a first-year engineering course: a human-centered learning analytics approach
Laura Melissa Cruz Castro (Research Assistant)
Tiantian Li
Leyla Ciner
Kerrie A Douglas (Assistant Professor of Engineering Education)
Christopher Greg Brinton (Purdue University at West Lafayette (COE))

Sustainability Inclusion Efforts in Three Unique First-Year Engineering Courses
Joan Tisdale
Angela R Bielefeldt (Professor)
Laura MacDonald (University of Colorado Boulder)
Carlo Salvinelli (Teaching Assistant Professor) (University of Colorado Boulder)

T28192 - First-Year Programs Division Technical Session 12: Work-in-Progress Postcard Session #1

1:45 pm - 3:15 pm
200J, Convention Center
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Moderators: Tyler Milburn, Jessica A Kuczenski (Academic Lecturer) (Santa Clara University)

Work In Progress: Reversi: A Platform for Teaching Programming Languages
Siwei He (Student)
Hamid Timorabadi
Afshin Poraria (University of Toronto)

Work-in-Progress: Project-based Learning in a Summer Engineering Program Implemented Virtually
Matthew Alexander
Michael Preuss (Co-founder and Lead Consultant)
Breanna Michelle Weir Bailey (Professor) (Texas A&M University - Kingsville)
David Hicks
Nitinlaksha Hiremath (Texas A&M University - Kingsville)
Rajashekar Reddy Mogiligidda (Lecturer 1) (Texas A&M University - Kingsville)
Jingbo Louise Liu (Full Professor) (Texas A&M University - Kingsville)
Lihua Zuo (Assistant Professor) (Texas A&M University - Kingsville)
Mahesh Hosur

Work In Progress: Evolution of A Near-Peer Co-Instructional Model for A Large-Enrollment First-Year Engineering Course
Haritha Malladi (Assistant Professor and Director of First-Year Engineering)
Joshua A Enszer (Associate Professor) (University of Delaware)
Jenni Buckley (Associate Professor) (University of Delaware)

Work in Progress: Designing a First-Year Hands-on Civil Engineering Course to Reduce Students Dropout and Improve the Overall College Experience
MariaEmilia Mariño
Cryseyda Jacoba Ubidia (Civil Engineer)
Miguelandres Guerra (Civil Engineering and Architecture)
Francisco Wladimir Jativa Valverde

Work in Progress: Diversity & Equity Training for Undergraduate Engineering Teaching Assistants
Ingrid Paredes (New York University Tandon School of Engineering)
Ameya Palav (New York University Tandon School of Engineering)
Chris Woods (New York University)
Sooah Kwak (New York University Tandon School of Engineering)
Rui Li (Dr.)
Victoria Bill (MakerSpace Director)

Student performance impacted from modifying a first-year/semester engineering core course during a global pandemic
Jacques C. Richard (Instructional Associate Professor/Aerospace Engineer)
Janie M Moore (Assistant Professor)

Work in Progress: Engineering First-Year Academy to Help Underprepared Students
Corey Kiassat, PhD, MBA, PE
Michael Ben-Avie (Senior Director of Learning Assessment and Research) (Quinnipiac University)

First-Year-Scholars (FYS) in Engineering Program (WIP)
Cyril B Okhio (Engineering Professor)
Sade Tramble (Kennesaw State University)
Amy M. Buddie (Kennesaw State University)

Work in Progress: An Integrative Learning-Centered Advising Experience for First Year Students
Shelly Gulati (Associate Professor and Chair) (University of the Pacific)
Carla Strickland-Hughes
Emily H. Brienza-Larsen (University of the Pacific)
Edith Sparks (Vice Provost) (University of the Pacific)

T335 - Grand Challenges Scholars Program (GCSP) Network Deans Panel
1:45 pm - 3:15 pm
205A, Convention Center

This session will include a panel featuring deans from GCSP Network institutions sharing their perspectives on initiating and maintaining a Grand Challenges Scholars Program (GCSP). Dean panelists will share why they value having a GCSP and how they support it through staffing, budgetary support, fundraising, faculty release time, activities, etc.

T34340 - Understanding the Expanding Field of Engineering Education: Comparative Education Methods and International Perspectives in the
Global Community

1:45 pm - 3:15 pm
103C, Convention Center

Speakers: Maartje E. D. Van Den Bogaard (Research Fellow), Ibrahim H. Yeter (Post Doctoral Researcher)

As the engineering education research (EER) community expands globally, studies from all over the world are finding their way into journals and discourse in the field. When looking for good practices or to position research, it is important to have a basic understanding of the context in which a study was set and on how to place differences between this context and one’s own. Within the field of comparative education, researchers have developed a set of methodologies and methods to study differences between education systems and national contexts. In this panel, we will give a brief introduction to methods to compare systems and the presenters will discuss differences between their national contexts to show how such methods may be applied.

T35587 - Residential Engineering Education in a Time of COVID

1:45 pm - 3:15 pm
Minnehaha, Hyatt Regency

T36111 - Project Based and Experiential Learning in Manufacturing

1:45 pm - 3:15 pm
102C, Convention Center

Machining Technology Course Sequence
Junkun Ma (Professor) (Sam Houston State University)
Suleiman Obeidat (Assistant Professor)

PROGRAMMING A FANUC INDUSTRIAL ROBOT FOR INCREMENTAL SHEET FORMING
Asghar Rezasoltani
Ryker Boehm (Western Kentucky University)
Adam Colton Patterson (Western Kentucky University)

Hands-on Project in a Modeling and Simulation Course: Assistive Device for Elderly
Tumkor Serdar (Dr. Tumkor Serdar) (University of Pittsburgh at Johnstown)
William Fetrow (University of Pittsburgh at Johnstown)

Challenges and Benefits of Industrial Sponsored Engineering Senior Projects in the Time of COVID
Derek M Yip-hoi (Assistant Professor) (Western Washington University)
Sura Alqudah (Assistant Professor) (Western Washington University)

T36232 - Redefining Manufacturing Education Practices

1:45 pm - 3:15 pm
102B, Convention Center

Manufacturing Engineering as a Multi-Campus Program
Casey Keulen
Christoph Sielmann
Dean Richert

Smart Manufacturing for Underserved Workforce Development
Amit J Lopes
Ivan Renteria Marquez (Dr) (University of Texas at El Paso)
Md Fashiar Rahman (University of Texas at El Paso)
Tzu-liang Bill Tseng (Professor and Chair) (University of Texas at El Paso)
Sergio Luna (University of Texas at El Paso)

WIP: Impact of Role-Playing Simulation for a Design for...
Manufacturing Course

Allen R. White (Associate Professor) (Rose-Hulman Institute of Technology)

Development of Self-Efficacy and Mindset Scales for Advanced Manufacturing and Data Sciences

Sarah E Zappe (Assistant Dean for Teaching and Learning; Director of the Leonhard Center)
Stephanie Cutler (Assessment and Instructional Support Specialist)
Sam Spiegel (Assistant Vice President for Online Education)
Deb Jordan (Trefny Center Director)
Jenifer Blacklock (Director of the Western Colorado University Partnership Program) (University of Colorado Boulder)
Francisco Garcia (Colorado School of Mines)

T3889 - Investigations Using Calculus Courses

1:45 pm - 3:15 pm
200A, Convention Center

Moderator: Charles Lam (Professor)

Come learn how to better teach the concept of a limit, help students become proficient at graphing a function, and improve students’ conceptual understanding of integration and how it relates to the area under a curve.

An Analysis of STEM Students’ Integral and Area Under the Curve Knowledge

Emre Tokgoz (Associate Professor) (Quinnipiac University)
Samantha Eddi Scarpinella (Student) (Quinnipiac University)

WIP: A Visual Approach to Teaching and Learning the Concept of Limit

Daniel Raviv (Professor)

An Analysis of Conceptual Integral Knowledge of STEM Majors

Emre Tokgoz (Associate Professor) (Quinnipiac University)

Analysis of STEM Students Accumulating Calculus Knowledge to Graph a Function

Emre Tokgoz (Associate Professor) (Quinnipiac University)
Samantha Eddi Scarpinella (Student) (Quinnipiac University)

T3913 - Mechanical Engineering: Student Growth

1:45 pm - 3:15 pm
200B, Convention Center

From advising to coursework, students must learn self-reflection to be able to succeed.

Journey towards competency-based grading for mechanical engineering computer applications

J. Blake Hylton (Assistant Professor of Mechanical Engineering) (Ohio Northern University)
Lawrence Funke (Assistant Professor) (Ohio Northern University)

Assessing Distinctives of the New XXXX Engineering Program in Terms of Their Impact on Recruitment, Student Satisfaction and Employment Potential

Daniel D. Jensen (Professor) (United States Air Force Academy)
William Johnston Allison (Instructor)
Douglas Fontes

Fishers Handle Bugs Better than Fish-Receivers: Nourishing Computational Self-Efficacy in Engineering Coursework

Seyed-Arman Ghaffari-Zadeh (PhD student)
Gerald J. Wang (Assistant Professor) (Carnegie Mellon University)

Academic Advising during Pandemic: How did it change?

Anu Osta (Dr) (Rowan University)
Smitesh Bakrania (Assistant Professor) (Rowan University)

Research seminar designed for undergraduate students builds confidence and access to research opportunities

Andre Montes
Sofia Ester Arevalo
Grace O’connell (University of California, Berkeley)

T4150 - Minorities in Engineering Division Technical Session 1

1:45 pm - 3:15 pm
212, Convention Center

Moderators: DeLean Tolbert Smith (Assistant Professor), Gholam Ali Shaykhian (Software Engineer)

The Development of a Student Organization that Supports Minorities in Computing (Experience)

Lance Leon Allen White (Graduate Research Assistant)
Larry Powell (Texas A&M University)
Karan Watson (Provost Emeritus & Sr. Professor) (Texas A&M University)
Tracy Anne Hammond (Professor)
Dilma Da Silva (Professor) (Texas A&M University)
Santana Cruz Gonzales (Texas A&M University)
Sara Amani

**Ko’u Mo’olelo: My Journey as a Kanaka Maoli**
Rediscovering Balance in Engineering Education (Experience)

Austin Morgan Kainoa Peters (University of San Diego)

**Defining Harassment in Academic Engineering: A Study of Student, Faculty, and Staff Perceptions**

Amir Hedayati Mehdiajadi (Assistant Professor)
Elizabeth Moschella-Smith (Research Scientist) (University of New Hampshire)
Mala Htun (Professor)

**The implementation and assessment of a social media initiative to increase visibility of LGBTQIA+ individuals in STEM (Research)**

Sara Hopper
Christopher Tossas-Betancourt (Graduate Student) (University of Michigan)
Peter Walczyk (University of Michigan)
Laura Hirshfield (Lecturer)
John Kloosterman

**T53334 - WIED Panel: Graduate Student and Postdoctoral Fellow Perspectives on Advancing Women and Gender Equity in Engineering**

1:45 pm - 3:15 pm
200H, Convention Center

**Moderator:** Lily M. Wang (Director, Durham School of Architectural Engineering and Construction)

**Speakers:** Corin (Corey) Bowen, Stephanie A Damas, Susan Sojadi (PhD Student), Gabriella Torres (AAMP-EM Education & Workforce Development Engineer)

This panel features current graduate students and postdoctoral fellows as they share their thoughts, experiences, and ideas on advancing women and gender equity in engineering. It is well known from national reports that the percentage of women and gender minorities in engineering has remained stagnant for decades. In part, while scholarship has been conducted to understand the experiences of women and gender minority students and faculty in engineering, oftentimes the strategies they use to navigate their degrees are less explored. Through this panel, we aim to start a conversation about ways that graduate students and postdoctoral fellows have enacted self-agency and how they have advocated for others in engineering.

**T5579 - Engineering Ethics Division: Computing, Technology, and AI**

1:45 pm - 3:15 pm
200C, Convention Center

**Moderators:** Yuchen Huang (Instructor), Jacques C. Richard (Instructional Associate Professor/Aerospace Engineer)

**Social responsibility attitudes among undergraduate computer science students: an empirical analysis**

Quintin Kreth (Doctoral Student) (Georgia Institute of Technology)
Daniel Schiff (Georgia Institute of Technology)
Jeonghyun Lee
Ellen Zegura (Professor) (Georgia Institute of Technology)

**The Future of AI: Engineering and Computing Graduate Students Perspectives on AI and Ethics**

Kerrie Hooper
Trina Fletcher

**A Module on Ethics and Social Implications of Computing for Introductory Engineering Computing Courses**

Brooke Odle (Assistant Professor) (Hope College)

**Assessment of Ethics and Social Justice Aspects in Data Science and Artificial Intelligence**

Franz Kurfess (Dr.) (California Polytechnic State University, San Luis Obispo)
Katya Nadine Vasilaky (Assistant Professor) (California Polytechnic State University, San Luis Obispo)
Tina Cheuk (Assistant Professor) (California Polytechnic State University, San Luis Obispo)
Ryan Jenkins (Associate Professor)
Grace Nolan
T56535 - Hands-On Mechanics
1:45 pm - 3:15 pm
Lakeshore C, Hyatt Regency
Moderator: Phillip Cornwell (Professor Emeritus)
In this session, educators get five minutes to show off their most effective classroom demonstrations and hands-on activities. This session is co-sponsored by the Mechanical Engineering and Civil Engineering Divisions, but any and all demonstrations are welcome! Come by and show what you do!

T5442 - ASEE’s DEI Strategic Planning Journey: From Self-Assessment to Action Plan
1:45 pm - 3:15 pm
102F, Convention Center
The American Society for Engineering Education is currently in the second year of the ASEE HQ Strategic Objectives Plan 2020-2023, which operationalizes the board’s strategic goals and priorities. Diversity, Equity, and Inclusion (DEI) is a high priority and is integrated throughout the plan. Some of the strategic DEI work to date includes:
- Conducting a survey identifying promising DEI practices in use at engineering professional societies
- Conducting a survey to identify groups underserved by ASEE in the context of the Society’s operations and activities
- Gathering research-based frameworks from other organizations around the world that will be useful in assisting with the conceptualization of new products and services
- Forming a DEI Strategic Planning Group for this concerted effort, which includes representation from ASEE Staff, the ASEE Board of Directors Task Force on Leadership Diversity, and the ASEE Commission on Diversity, Equity, and Inclusion (CDEI)
- Applying to and accepting the invitation to join the ACCESS+ Community of Practice, which includes completing the ACCESS+ Equity Environmental Scan Tool (EEST) to better understand where ASEE is currently in its DEI journey

In this session, ASEE staff, along with other members of the DEI Strategic Planning Group, will review the strategic objectives and the DEI progress to date, share results from the surveys and the EEST self-assessment, discuss next steps, and invite input from attendees.

T75507 - Tribal Colleges Meeting
1:45 pm - 5:00 pm
Skyway AB, Hyatt Regency

T75530 - Free Time
1:00 pm - 1:45 pm
Exhibit Hall B & C Foyer, Convention Center
Take this time to relax, refresh, and catch up on emails! Then return ready to attend more of the exciting ASEE Annual Conference sessions on offer!

T75585 - ASEE New Board Member Orientation
1:45 pm - 3:15 pm
M100A, Convention Center
ASEE New Board Member Orientation

T75640 - ASEE Profiles of Community and Technical Colleges
1:45 pm - 3:15 pm
M100FG, Convention Center
Speaker: Joe Roy (Director of Institutional Research and Analytics)
With support from the NSF’s ATE program, ASEE is beginning a new survey of engineering technology programs...
at community and technical colleges in summer 2022. This session will cover what data will be collected, how it might inform national and local policy, and gaps in the current federal data collections.

T75698 - Engineering Research Council Board Meeting and Planning Retreat
1:45 pm - 5:00 pm
M100C, Convention Center
ERC board meeting and planning retreat.

T77589 - RE-Mixing Engineering Ethics: Engaging the BED in a Conversation About Engineering Ethics Education
1:45 pm - 3:15 pm
Nicollet D1, Hyatt Regency
Moderators: Alison J Kerr (Postdoctoral Researcher) (Purdue University at West Lafayette (PPI)), Andrew O. Brightman (Assistant Head for Academic Affairs and Associate Professor of Engineering Practice) (Purdue University at West Lafayette (COE)), Justin L Hess (Assistant Professor), Nicholas D. Fila (Research Assistant Professor) (Iowa State University of Science and Technology), Athena Lin (Graduate Student)
This special session will invite audience interactions through discourse on the current state of engineering ethics teaching and research as examined both within the specific context of biomedical engineering (BME) research and in broader engineering contexts. In this interactive session we will ask engineering educators to reflect on and share what they know about the current state of engineering ethics education in BME and other environments in which they have experience and knowledge. We hope that this session will serve as an interesting way of engaging BME educators in conversations around ethics education and in inviting other engineering ethics educators and researchers who may not necessarily focus on BME to share their perspectives and consider how to integrate and leverage insights across contexts.

T8172 - Community Engagement Division Technical Session 3-Multi- and Inter-disciplinary, Collaboration, and Engagement in Practice
1:45 pm - 3:15 pm
208, Convention Center
Speakers: Thomas Rossi (Pennsylvania State University, Behrend College), Malle R Schilling (Virginia Polytechnic Institute and State University), Yuting W. Chen (Teaching Associate Professor), Monica Quezada-Espinoza, Justin Reeves Meyer
How interdisciplinary collaboration helps communicate engineering research to community audiences
Justin Reeves Meyer
Laura Weiss (Researcher)
Donnelley Hayde
Meris Mandernach Longmeier
Mingqi Cai (The Ohio State University)
Sathya Gopalakrishnan (Associate Professor ) (The Ohio State University)

Engagement in Practice: Toward Building University ’apos;s Multi-Disciplinary Service-Learning Ecosystem
Yuting W. Chen (Teaching Associate Professor)
Blake Everett Johnson (Teaching Assistant Professor)
Marcia Pool (Asst. Dir. Edu., Cancer Center at Illinois &amp; Teaching Associate Professor, BIOE)
Saadeddine Shehab (Postdoctoral Research Associate) (University of Illinois at Urbana - Champaign)
Brian K. Johnson (Professor) (University of Illinois at Urbana - Champaign)

Proposal for the design of a professional practice program for geology and mining engineering students through a community outreach project
Monica Quezada-Espinoza
Ruben Bustamante-Encina (Universidad Andres Bello)
Marcela Silva (M. Ed)
Nivia Diaz (MSc. Assistant Professor) (Universidad Andres Bello)

Smartphone App Developed By Students to Help Community Members in Crisis
Thomas Rossi (Pennsylvania State University, Behrend College)

Benefits, Roles and Tensions: Understanding the Process of Collaboration in Rural Engineering Education Contexts
Malle R Schilling (Virginia Polytechnic Institute and State University)
Jacob R Grohs (Assistant Professor) (Virginia Polytechnic Institute and State University)

Pavel Pavlovich Pisarchuk (Junior Engineering Student) (Washington State University)
Allegra A Bryant (Washington State University)
Danielle Gedlick (Washington State University)
Terry Sjolander (Washington State University)

**T82539 - INDUSTRY DAY SESSION**

I - Changing the Equation for Diversity, Equity, Inclusion, and Access Through Academia/Industry Collaboration

1:45 pm - 3:15 pm
101D, Convention Center
Moderator: P.J. Boardman (Education Marketing Director) (MathWorks)
Speakers: Stacy S Klein-Gardner (Adjunct Professor), Renetta Tull, Melinda Higgins, Jenna P. Carpenter (Dean of Engineering) (Campbell University), Boz Bell (Public Sector Commercial Account Executive Founder)

How do we change the equation to increase diversity, equity, inclusion, and access in engineering? Join this panel of thought leaders in academia and industry to explore real cases and success stories to show how academia/industry collaboration can open up access to encourage greater diversity, equity and inclusion in engineering to prepare students for the jobs of tomorrow.

**T83 - Experimentation and Laboratory-Oriented Studies Division Technical Session 3: Best of ELOS**

1:45 pm - 3:15 pm
205C, Convention Center
Moderator: Robby Sanders (Associate Professor)

This session highlights the best papers submitted to ELOS this year.

The Status of Laboratory Education Focusing on Laboratory Report Assignment and Assessment in the Engineering Programs of a 4-Year Institution

Dave Kim (Professor and Mechanical Engineering Program Coordinator) (Washington State University-Vancouver)
John D Lynch (Washington State University)

**T8453 - Engineering Physics and Physics Division Technical Session 1**

1:45 pm - 3:15 pm
103A, Convention Center
Moderator: Teresa L. Larkin (Associate Professor of Physics Education)

A Modern Approach to Teaching Computational/Numerical Methods

Evan C. Lemley (Professor and Assistant Dean) (University of Central Oklahoma)
Sezin Kadioglu (Lecturer) (University of Central Oklahoma)
Viability of the Essential Leg Tremor Monitoring Device
Bala Maheswaran (Professor)
Evan Eyler (Northeastern University)
Yide Song

Enhancing Post-Covid Student Proficiency and Confidence in Using Laboratory Test Equipment
Paul Benjamin Crilly (Professor)
Richard J. Hartnett (Professor)

Design and Efficiency Analysis of a Hybrid Fuel Cell and Battery System
Magdalena Balmeras Perez (United States Coast Guard Academy)
Philip Rogers
John Luke Buchert (United States Coast Guard Academy)
Daniel Sullivan (United States Coast Guard Academy)
Tooran Emami (Associate Professor)

Acoustical Phenomena of Indigenous Instruments: Intercultural Music Immersion Through the Lens of Physics
Tyler Locke
Lucas Faria de Sá Tucker
Don Heiman (Professor) (Northeastern University)
Anthony Paul De Ritis (Professor) (Northeastern University)
Haridas Kumarakuru (Assistant Teaching Professor)

Horizontal Propulsion Using Model Rocket Engines (Part B)
Huseyin Sarper (Master Lecturer) (Old Dominion University)
Nebojsa Jaksic

Augmenting undergraduate Engineering Technology education through applied research
Niaz Latif
Mohammad A. Zahraee (Associate Dean, College of Technology) (Purdue University Northwest)

Shall We Keep Using Zoom etc. after the Pandemic?
Wei Zhan (Professor)
Yonghui Wang
Suxia Cui (Associate Professor)
Bugrahan Yalvac (Associate Professor) (Texas A&M University)

T85468 - ETD - Engineering Technology Leadership Institute (ETLI)
1:45 pm - 3:15 pm
M100E, Convention Center
This is the Engineering Technology Leadership Institute meeting (ETLI). This is a planning meeting for the ETLI 2023.

T88196 - PCEE Session 13: Equity in P-12 Engineering Education
1:45 pm - 3:15 pm
201, Convention Center
Moderator: Liz Parry (Partner)
Speakers: James Holly, Jr. (Assistant Professor), Mariam Manuel (Assistant Instructional Professor), Christine M Cunningham (Professor Education and Engineering), Sarah Catherine Lilly (University of Virginia)

An Exploration of the Role of Critical Consciousness in Pre-College Engineering Education (Other)
James Holly, Jr. (Assistant Professor)

The Intersection of Culturally Responsive Pedagogy and Engineering Design in Secondary STEM (Research to Practice)
Mariam Manuel (Assistant Instructional Professor)

Curriculum Design Principles for Equity in Engineering (Fundamental, Diversity)
Christine M Cunningham (Professor Education and Engineering)
Gregory John Kelly (Dr.) (Pennsylvania State University)

Teachers’ Beliefs in Enacting an Interdisciplinary
T9056 - Systems Engineering Division Technical Session 1

1:45 pm - 3:15 pm
102A, Convention Center

Engineering Project in Inclusive and General Classroom Contexts (Fundamental, Diversity)
Sarah Catherine Lilly (University of Virginia)
Anne Marguerite Mcalister (Anne McAlister) (University of Virginia)
Jennifer L Chiu (Associate Professor of STEM Education) (University of Virginia)

T91706 - DEED Technical Session 4 Best in DEED

1:45 pm - 3:15 pm
101F, Convention Center

Moderator: Corey Schimpf contact: schimpf2@buffalo.edu
Come see some of our best papers this year and the winner of Best in DEED for 2022!

An Engineering Course as a Design Object
Nicholas D. Fila (Research Assistant Professor) (Iowa State University of Science and Technology)
Corey T Schimpf (Assistant Professor)

Designing the Project-Based Learning Experience using Motivation Theory
Lauren Anne Cooper (Assistant Professor)
Daria A Kotys-schwartz (Instructor of Mechanical Engineering) (University of Colorado Boulder)

How the use of concept maps changes students’ minds and brains
Tripp Shealy (Associate Professor) (Virginia Polytechnic Institute and State University)
Paulo Ignacio Jr. (Virginia Polytechnic Institute and State University)

A Comparative Study of Collaborative and Inclusive Skills Development in Capstone Design Teams at Three Different Engineering Institutions
Courtney Pfluger (Teaching Professor)
Sindia Rivera-jimenez
Anastasia Hauser (University of Kentucky)
T91705 - DEED Technical Session
3 Capstone Design

1:45 pm - 3:15 pm
101I, Convention Center

Moderator: Jeremy Edmondson

The Design Firm Model as Applied to Capstone Design
Chelsea Salinas (Teaching Associate Professor)
Megan Sanders (Senior Assessment Associate) (Colorado School of Mines)

(Wave) Guiding EE’s Out Of The Capstone Box
C. Richard Compeau (Professor) (Texas State University)
Austin Talley (Assistant Professor of Practice) (Texas State University)

Evaluating ABET Student Outcome (2) in a Multidisciplinary Capstone Project Sequence
Nicholas A Baine (Associate Professor of Engineering) (Grand Valley State University)

Teaching models for Senior Design courses; a Case Study
Wilhelm Alex Friess (University of Maine)
Andrew Goupee
Justin Lawrence Lapp (Assistant Professor) (University of Maine)

T92683 - Engineering Culture Roundtable

1:45 pm - 3:15 pm
Ballroom B, Convention Center

In the broad field of engineering, do our attitudes and behavioral characteristics—our culture—best serve our core mission of solving problems for our world and for our society? Additionally, do the practices and skills we develop in our students place greater importance on some information than others? Given the changing forces influencing our world and society, should we revisit the practices and skills of valuing and using information? Should we revisit design and optimization processes so that our engineered solutions prove sustainable? Roundtables will be facilitated to explore the Strengths, Opportunities, Aspirations, and Results (SOAR) of our engineering culture. As Ray McDermott noted in 2006, “Culture is not a past cause to a current self. Culture is the current challenge to possible future selves.” Join these roundtable discussions to participate in defining our future selves.

T9394 - Inclusivity at Two Year Colleges

1:45 pm - 3:15 pm
206, Convention Center

Moderator: Edris Ebrahimzadeh (Professor) (Des Moines Area Community College)

Examples of Inclusivity at Two-Year Colleges. This session will include examples of how to engage underserved student populations in Engineering and Engineering Technology programs at Two Year Colleges to improve student success.

Work-based Experiential Learning in IT: Career Enhancement for Underserved Students at a 2-year HSI
Cynthia Kay Pickering (SFAz Fellow)
Mara Lopez
Katya M Pinto (Professor)
Gloria Gonzalez
Marcus Jerome Garcia (Work Based Experience Coordinator) (Phoenix College)
Caroline Vaningen-dunn (Director)

Mathematics Success for Underrepresented Community College Students through STEM Core: A Wrap-Around Student Services Model
Janet Yowell (Director, Strategic Community College STEM Initiatives) (University of Colorado Boulder)
Gabe Hanzel-sello
Gary Barnak (Grant Project Manager) (Saddleback College)
Michael Sean Venn (Community College of Baltimore County)

Career Advancement of Women in Engineering Disciplines at Two-Year Degree Institutions: Documenting Challenges and Potential Solutions to Raise Inclusivity
Kimberly A Luthi (Professor of Practice) (Embry-Riddle Aeronautical University - Worldwide)

Engineering Innovation Division Technical Session 5

3:30 pm - 5:00 pm
102A, Convention Center

Moderator: Prateek Shekhar (Assistant Professor)

Catalyzing U.S. Innovation and Entrepreneurship: Approaching the Evaluation of the National Science Foundation’s I-Corps Program
2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

T2435 - ASEE Aerospace Division Business Meeting
3:30 pm - 5:00 pm
L100D, Convention Center
Business meeting to review financials and hold elections.

By Invitation Only - ASEE Past President Sheryl Sorby Friends and Family Reception
3:30 pm - 5:00 pm
M100B, Convention Center
2023 Conference for Industry and Education Collaboration
Collaborate, Communicate, and Innovate
Engineering Education
Charleston, SC | February 8-10, 2023
Mark your calendar to visit Charleston, SC from February 8 - 10, 2023 for the Annual Conference for Industry and Education Collaboration (CIEC). This annual conference includes workshops, technical sessions, training and a plenary emphasizing the long and mutually beneficial partnerships between education, industry, and government. Additional Details Coming Soon!https://www.asee.org/events/featured-events/ciec2022

T15386 - ERM Business Meeting
3:30 pm - 5:00 pm
Mirage, Hyatt Regency
Awesome and fun meeting to discuss ERM business! Everyone is welcome to come hear what’s going on in ERM and network with new and current members! Join us!

T104 - Experimentation and Laboratory-Oriented Studies Division Technical Session 4: Bring Your Own Experiment (BYOE)
3:30 pm - 5:00 pm
205C, Convention Center
Moderator: Robby Sanders (Associate Professor)
T1736 - Energy Conversion and Conservation Technical Session 1: Innovative Approaches to Teaching Energy-Related Concepts

3:30 pm - 5:00 pm
102C, Convention Center

Moderators: Anveeksh Koneru, Ira Harkness (Instructional Assistant Professor) (University of Florida)
Speakers: Neda Bazyar Shourabi (Assistant Professor of Teaching), Joseph M Elio (Graduate Student) (Arizona State University), Monika Herrmann (Assistant Professor and Program Coordinator), John M Mativo (Professor) (University of Georgia)

Speakers at this session will present papers relating to new and innovative approaches for teaching energy-related concepts in engineering classrooms.

Interdisciplinary Collaboration to Engage Engineering Students’ Interest in Renewable Energy Concepts
Abhishek Verma (Dr.) (University of Wisconsin - Stout)
Kenan Baltaci (Assistant Professor) (University of Wisconsin - Stout)

Inexpensive solar garden light provides valuable energy system learning tool
Dale H. Litwhiler (Associate Professor) (Pennsylvania State University, Berks Campus)
Neda Bazyar Shourabi (Dr.) (Pennsylvania State University, Berks Campus)

A Software Application Teaching Aid for Understanding the Sizing and Constraints of Energy Storage Technologies
Joseph M Elio (Graduate Student) (Arizona State University)
Ryan James Milcarek (Assistant Professor) (Arizona State University)

Lessons learned in engine temperature control through radiator configurations: A formula SAE design
John M Mativo (Professor) (University of Georgia)
Jacob Lancaster

T21383 - ASEE LEAD Business Meeting

3:30 pm - 5:00 pm
Lakeshore C, Hyatt Regency

Welcome to the business meeting of the ASEE Lead division. All members and interested ASEE delegates welcome

T22438 - Open Forum on Issues of Relevance to Early Career Librarians

3:30 pm - 5:00 pm
200C, Convention Center

Moderator: Mel DeSart (Head, Engineering Library)

Are you new to engineering librarianship? Do you have concerns about the future or the engineering librarianship and libraries in general? Join the ELD Mentoring Committee for an open forum discussion with the ELD community. Topics could be related to the specifics of engineering librarianship, tenure and promotion, publishing, instruction, collection development, professional involvement and more.

T2717 - Faculty Development Division Technical Session 9

3:30 pm - 5:00 pm
200F, Convention Center

Moderator: John Ray Morelock (Associate Director for Educational Innovation and Impact)
Speaker: Homero Murzi (Assistant Professor)

Impact of COVID-19 Pandemic on Instructor Course Preparation Time During Transition to Asynchronous and Flipped-Style Lectures: A Case Study
Todd Freeborn (The University of Alabama)

A Roadmap for the Design and Implementation of Communities of Practice for Faculty Development
Victoria Matthew (Senior Program Officer) (VentureWell)
Surbhi Godsay Lipkin-Moore (Owner, Lead Evaluator)
Jeffery M Plumblee (Sr. Program Officer)
Pedro E. Arce (Professor) (Tennessee Technological University)
Andrea Arce-trigatti (Tallahassee Community College)
Nathalie Lavoine (Assistant professor) (North Carolina State University)
University at Raleigh)
Lucian Lucia (Professor) (North Carolina State University at Raleigh)
Emre Selvi
Ron Edelen (Jacksonville University)
Marjan Eggermont (Teaching Professor) (University of Calgary)
Murat Tiryakioglu (Professor) (Jacksonville University)
Justin R. Hall (Jacksonville University)

Behavioral Adaptability of Engineering Instructors Engaging in Emergency Remote Teaching During Three Semesters of the COVID-19 Pandemic
Lucy Atkinson (Swarthmore College)
Grace Panther (Assistant Professor)
Heidi A. Diefes-Dux (Professor)

Engineering Instructor Experience During Emergency Remote Teaching & Beyond: A Case Study
Dorian Bobbett
Grace Panther (Assistant Professor)
Heidi A. Diefes-Dux (Professor)

Work in Progress: Effect of pre-college academic activities on the sense of belonging of first-year engineering students
Tami Coronella (Director, Academic Administration and Student Success)

Work In Progress: Technical Consulting as an Experiential Form of Peer Tutoring
Joshua L. Hertz (Associate Teaching Professor)

Work In Progress: Implementing Team Projects in Online Courses - Balancing Individual Responsibility and Team Collaboration
Anoop Singh Grewal (Lecturer) (Arizona State University)
Haolin Zhu (Lecturer Sr. & Co-Director)
David Jacob Taylor (Senior Lecturer) (Arizona State University)

Work in Progress: Teaching MATLAB through Authentic Data Collection and Analysis Experiences using self-contained, guided experimental setups with a range of disciplinary themes.
Brian Patrick O&#39;connell (Associate Teaching Professor)

Work in Progress: Accessible Engineering Education for Workforce 4.0
Rui Li (Dr.)
Jack Bringardner (Assistant Dean of Academic and Curricular Affairs) (New York University Tandon School of Engineering)
Victoria Bill (MakerSpace Director)
Vikram Kapila (Professor) (New York University Tandon School of Engineering)

Persistence and the Pandemic: Retention of Historically Underrepresented First-Year Engineering Students Before and After COVID-19
Sequoia Naomi Callahan
Blaine Austin Pedersen (Graduate Student)
Lerah Lockett (Prairie View A&amp;M University)
Camille S. Burnett (Assistant Professor) (Prairie View A&amp;M University)
Karen E Rambo-hernandez (Associate Professor)

T287 - First-Year Programs Division Technical Session 13: Work-in-Progress Postcard Session #2
3:30 pm - 5:00 pm
200J, Convention Center

Moderators: Susan F Freeman (Teaching Professor), Cassie Wallwey (Research Associate)

WIP - 360 Coaching to Support Whole-Student Advising in the First-Year
Stacy Tantum (Associate Professor of the Practice)
Sophia T Santillan (Associate Professor of the Practice)
(Duke University)
Lupita Temiquel-McMillian (Assistant Dean) (Duke University)
Jennifer Ganley

Work-in-Progress: Designing Pre-Course Sessions to Enhance Student Preparation
Randy Hugh Brooks (Professor) (Texas A&amp;M University)

Work in Progress: Adapting to the changes in the teaching pedagogy post-pandemic in the First-Year Engineering course
Qudsia Tahmina (Assistant Professor)

T288 - First-Year Programs Division Technical Session 14: Introductory Programming Assessment, Plagiarism, Motivation, Engagement, and Textbooks
3:30 pm - 5:00 pm
209, Convention Center
T29436 - Graduate Studies Division Business Meeting
3:30 pm - 5:00 pm
L100A, Convention Center
This is the business meeting for the Graduate Studies Division.

T30387 - Computers in Education (CoED) Business Meeting
3:30 pm - 5:00 pm
M101AB, Convention Center
Please join us for the annual Computers in Education (CoED) Business Meeting

T324 - NSF Sponsored Projects in ECE
3:30 pm - 5:00 pm
202, Convention Center
Moderator: Diane T. Rover (University Professor) (Iowa State University of Science and Technology)
Speakers: Huihui H Wang (Associate professor), Stu Thompson (Associate Professor and Department Chair) (Bucknell University), Quamar Niyaz, Michel A Kornegay (Professor) (Morgan State University), Lisa Shatz (Professor) (Suffolk University), Nathaniel Hunsu (University of Georgia), Jumoke 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be held at this Business Meeting.

**T341 - In Search of an Ethos for the Technological Age**

**3:30 pm - 5:00 pm**

205A, Convention Center

Contemporary engineering and technology, with its ever deeper penetration into the reality of our lives and carried forward by the cultural forces of market and politics, have afforded powers to humanity beyond anything known or even dreamed of before. Engineering and technology are forms of power over matter, life on earth, and over humanity itself; and albeit with shifting foci, they keep growing at an accelerating pace. The exercise of these powers for more than two centuries after the industrial revolution has raised the material condition of its main beneficiaries to heights equally unknown in history.

**T3486 - International Division Technical Session 1: Looking at Study Abroad through an enhanced lens**

**3:30 pm - 5:00 pm**

103C, Convention Center

Moderator: Edward Randolph Collins (Associate Dean for Undergraduate and International Studies)

Subtheme: Looking at Study Abroad through an enhanced lens

International Division - Entrepreneurship & Engineering Innovation Division Towards a new type of hybrid mode collaboration in Academia-Industry Hackathons.

Yulia Skrupskaya

Victor Taratukhin (Next-Gen Network Global Projects and Regional Director for Silicon Valley/US West)

Yury V. Kupriyanov (National Research University Higher School of Economics)

Joerg Becker

Facilitation of a Global Engineering Education Experience through Consortium Membership

Pingchien Neo (Director, International Engineering Programs) (University of Florida)

Edward Randolph Collins (Associate Dean for Undergraduate and International Studies)

Natalie Downing (Mt San Antonio College)

Damien FABREGUE (INSA de Lyon - DOC#39;INSA)

Developing Collaborative Online International Learning (COIL) projects in Engineering Education

Meredith Blumthal

Brian Woodard (Director, Undergraduate Programs) (University of Illinois at Urbana - Champaign)

Molly H Goldstein (Assistant Teaching Professor) (University of Illinois at Urbana - Champaign)

Ernest-John Ignacio (University of Illinois at Urbana - Champaign)

Gretchen M. Forman (IEFX Program Coordinator) (University of Illinois at Urbana - Champaign)

Hannah Dougherty (University of Illinois at Urbana - Champaign)

Enhancing the Equity and Inclusivity of Engineering Education for Diverse Learners through an Innovative Instructional Design, Delivery, and Evaluation: International Students in Focus

Jemal Bedane Halkiyo

Case Study: Engineering Marvels for Study Abroad and Global Learning

Kacie Caple D’Alessandro (Visiting Assistant Professor) (Virginia Military Institute)

**T35110 - LEES 3: Assessing/Addressing Mental Health**

**3:30 pm - 5:00 pm**

207, Convention Center

Speakers: Kacey Beddoes (Project Director), Sarah A Wilson (Assistant Professor), David Bruce

In Their Own Words: How Aspects of Engineering Education Undermine Students Mental Health Identifying common perceived stressors and stress-relief strategies among undergraduate engineering students Praxis in Preventing Depression through Classroom Activity by Prioritizing Authentic Interaction: A Theory of Change

Praxis in Preventing Depression through Classroom Activity by Prioritizing Authentic Interaction: A Theory of Change

David Bruce

Identifying common perceived stressors and stress-relief
strategies among undergraduate engineering students
Sarah A Wilson (Assistant Professor)
Courtney Janaye Wright (Ms.) (University of Kentucky)
Melanie E. Miller
Lucy Elizabeth Hargis
Ellen L Usher
Joseph H Hammer
Halle Danielle Shannon

In Their Own Words: How Aspects of Engineering Education Undermine Students’ Mental Health
Kacey Beddoes (Project Director)
Andrew Danowitz (Associate Professor of Computer Engineering)

T354 - Social Event for
T35416 - Liberal Education/Engineering & Society [LEES] Business Meeting
3:30 pm - 5:00 pm
101G, Convention Center
This event is open to any who would like to attend. If you are interested in learning a bit about the division, we can make space to share our experiences. For those who are part of LEES, this is a great opportunity to voice your concerns and interests. This is also a good time to think about opportunities to shape the division’s efforts in a leadership position or through task groups who work across divisions. Agenda information will be provided closer to the conference date. After the business meeting, we usually take a short break and head out to a social event nearby. Come to both; come to either; all are welcome.

T36155 - Design Experiences in Manufacturing Education
3:30 pm - 5:00 pm
102B, Convention Center
Moderators: Zhenhua Wu (Associate Professor) (Virginia State University), Siamak Farhad (Associate Professor)
Continuous Improvement of an Experiential Learning Manufacturing Lab Course
Katie Leanne Basinger (Dr.)
Benjamin Elgan (University of Florida)
Sean R Niemi (Assistant Instructional Professor)

A Holistic Design Approach for Integrated Learning in Manufacturing Education
Faisal Aqlan
Daniell DiFrancesca (Assistant Professor of Educational Psychology) (Pennsylvania State University, Behrend College)
Qi Dunsworth (Director, Center for Teaching Initiatives) (Pennsylvania State University, Behrend College)
Chetan Prabhakar Nikhare (Associate Professor) (Pennsylvania State University, Behrend College)
Matthew Swinarski (Pennsylvania State University, Behrend College)
Mohammad Rasouli (Assistant Professor) (Pennsylvania State University, Behrend College)

Designing a new course using Backward design
Jaby Mohammed (Assistant Professor) (Illinois State University)
Klaus Schmidt (Professor) (Illinois State University)
Jeritt Williams

First Year Experience from RET Site: High School Teacher Experience in Engineering Design and Manufacturing
Weihang Zhu (Professor) (University of Houston)
Francisco C. Robles Hernandez (Professor) (University of Houston, College of Technology (MERGED MEMBERSHIP WITH COE))
Medhat El Nahas
Burak Basaran (Associate Professor) (University of Houston)
Kamran Alba (University of Houston)

T381 - Two-Year College Division Business Meeting
3:30 pm - 5:00 pm
L100C, Convention Center
The annual business meeting of the Two-Year College Division. At this meeting, the results of the election of officers for 2022-2024 will be announced. Other topics to be discussed are the results of the 2022 Two-Year College Division engineering design competition, as well as the rules for the 2023 Two-Year College Division engineering
design competition.

**T382 - Construction Division Business Meeting**

3:30 pm - 5:00 pm  
M100FG, Convention Center

This time is requested for our Business meeting

**T39719 - Mechanical Engineering: Design and Labs**

3:30 pm - 5:00 pm  
200B, Convention Center

Speaker: Kenneth W. Van Treuren (Professor and Associate Dean for Research and Faculty Development)

Unified approach to teaching uncertainty across a three-course mechanical engineering laboratory sequence

- Eric Dieckman (University of New Haven)
- Maria-isabel Carnasciali (Associate Professor)
- Ismail I Orabi (Professor) (University of New Haven)

Improving Student Laboratory Experiences through Integration of Instructions, Worksheets, and Computer Code using LiveScripts

- Diane L Peters (Associate Professor)
- Austin L Nash (Assistant Professor) (Kettering University)

Redesign of a Machine Design Course Sequence to Align with Current Industry and Pedagogical Practices

- Adam Wickenheiser
- Jenni Buckley (Associate Professor) (University of Delaware)
- Amy Trauth (Dr.) (University of Delaware)
- Marcia Gail Headley (Data Scientist)

Measuring Engineering Students’ Engagement in Sustainability Design Concepts

- Karen Perez
- Donald Plumlee (Associate Dean) (Boise State University)

Mapping of ABET Requirements Through Senior Design Projects

- Manish Paliwal (Associate Professor) (The College of New Jersey)
- Bijan Sepahpour

**T40384 - Military and Veterans Division Business Meeting**

3:30 pm - 5:00 pm  
M100HI, Convention Center

Military and Veterans Division Business Meeting

**T75562 - Member Feedback on New Website, Business, and Paper Management Systems**

3:30 pm - 5:00 pm  
Ballroom A, Convention Center

Member Feedback on New Website, Business, and Paper Management Systems

**T4192 - Minorities in Engineering Division Technical Session 2**

3:30 pm - 5:00 pm  
212, Convention Center

Moderators: Shonda L Bernadin (Associate Professor) (Florida A&M University - Florida State University), Curtis R. Taylor (Associate Dean for Student Affairs) (University of Florida)

Assessing the Effectiveness of The LIAT College Access and Success Model (L-CAS) on Low-income Hispanic Engineering Students (Experience)

- Manuel A. Jimenez (Professor)
- Luisa Guillelmaid (Dr.) (University of Puerto Rico, Mayaguez Campus)
- Nayda G. Santiago (Professor) (University of Puerto Rico, Mayaguez Campus)
- Aida I. Santiago-roman (University of Puerto Rico, Mayaguez Campus)
- Sonia M. Bartolomei-suarez (Professor) (University of Puerto Rico, Mayaguez Campus)
- Oscar Marcelo Suarez (Professor) (University of Puerto Rico, Mayaguez Campus)
- Pedro O. Quintero
- Carla Lopez Del Puerto (Professor)

Engineering Students Conceptions of The Hidden Curriculum in Hispanic-Serving Institutions: Learning to Inform Practice
T42115 - Multidisciplinary Engineering Division Technical Session - Best Diversity Paper

3:30 pm - 5:00 pm
210, Convention Center

**Moderators:** Cynthia Wise Barnicki (Professor), Ismail Haltas

**Experiences of students supported by an NSF S-STEM grant in a Robotics and Mechatronic Systems Engineering program**
- Shuvra Das (Professor)

**Work in Progress: Preparing Students for Undergraduate Research Online and In the Classroom - Framework, Participant Reflections, and Lessons Learned**
- Marian S. Kennedy (Associate Professor)
- Cora Allard-Keese (Clemson University)
- Joshua D Alper (Clemson University)

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**T42261 - Multidisciplinary Engineering Division Technical Session - Interdisciplinary Capstone Projects, Pandemic Adapted Mechatronics Lab, Call for Change**

3:30 pm - 5:00 pm
205D, Convention Center

**Moderators:** Duncan Davis (Associate Teaching Professor), Bart M Johnson (Vice President Academic and Student Affairs)

**Integrated multidisciplinary capstone projects of an underwater robot and a quadcopter for building structural analysis**
- Byul Hur (Assistant Professor)
- Wei Zhan (Professor)
- Boong Yeol Ryoo (Texas A&amp;M University)

**Inter-Disciplinary Senior Design Projects with Industry Partnership - A Pilot Study**
- Adeel Khalid (Professor)

**Evidence of the Benefits of Interdisciplinary Engineering Teams: Incorporating Systems Engineering into Civil Engineering Design**
- Brett Rocha
- Aaron T Hill (Colonel, US Army)
T513 - ABET SESSION: How to Lead the Preparation for an Onsite Visit
3:30 pm - 5:00 pm
101C, Convention Center

Leading the institutional planning and execution for an onsite ABET visit involves creating an infrastructure of support from many groups of stakeholders. Best practices from the viewpoints of both Program Evaluators and institutional representatives will be of interest to institutional representatives and others preparing for onsite visits.

Speakers: ABET Engineering Accreditation Commission and Engineering Technology Accreditation Commission Leadership

T51394 - Undergraduate Experience Committee (UEC) Business Meeting
3:30 pm - 5:00 pm
M100A, Convention Center

The purpose of the UEC Business meeting is to recap the sessions that have taken place, review financials, garner feedback from other deans and associate deans, and begin to plan next year’s meeting.

T55413 - Engineering Ethics Division Business Meeting
3:30 pm - 5:00 pm
Lakeshore B, Hyatt Regency

Please join us for division reports, elections, best paper and best diversity paper awards, and group discussion!

T56160 - Experiential Learning in Mechanics
3:30 pm - 5:00 pm
101F, Convention Center

Moderator: Nicolas Ali Libre (Missouri University of Science and Technology)

If you believe hands-on activities are crucial for student learning, then this is the session for you. In this session, you will find a variety of papers on modeling kits, desktop...
learning modules, and experiential learning activities.

**Hands-On Statics to Improve Conceptual Understanding and Representational Competence**
Eric Davishahl (Professor and Program Coordinator) (Whatcom Community College)
Lee Singleton (Professor)
Todd Haskell
Kathryn Mary Rupe (Assistant Professor of Math Education) (Western Washington University)

**Developing a 3D-Printed Statics Modeling Kit**
Seyed Mohammad Seyed Ardakani
Joshua Ellis (Student) (Ohio Northern University)

**Dynamic 3D-Printed Statics Modeling Kit and In-Class Activities**
Seyed Mohammad Seyed Ardakani
Joshua Ellis (Student) (Ohio Northern University)

**Identification and Creation of Experiential Learning Modules for Engineering Statics and Dynamics (Work in Progress)**
Anthony Battistini (Assistant Professor)
Mohammad Shafinul Haque
Steve Guzman
Matt Sims (Angelo State University)

**Forming Cognitive Connections: Desktop Learning Modules, Structural Analysis Software, and Full-Scale Structures**
David Brian Dittenber (Associate Professor, Civil Engineering) (Cedarville University)
Luke Fredette (Assistant Professor) (Cedarville University)

**T8173 - Community Engagement Division Technical Session 4 - COVID and Virtual Learning**

3:30 pm - 5:00 pm
200D, Convention Center

**Moderator:** Malini Natarajarathinam (Associate Professor)

**Speakers:** Malini Natarajarathinam (Associate Professor), Patrick Sours (Graduate Student) (The Ohio State University), Jessie Marshall Zarazaga (Clinical Assoc. Professor, Sustainability & Development, SMU) (Southern Methodist University), Angelina Nicole Rivera (Student Researcher)

Moderator: Malini Natarajarathinam


**T75618 - New Division and Section Officer Orientation HELD VIRTUALLY AFTER ANNUAL**

3:30 pm - 5:00 pm
None, To be Held Virtually after the Conference

This session, usually held on the Wednesday of the annual conference, will be held virtually after the Annual Conference. Invitations and links will be sent directly to 2022-2023 division and section officers.
T84316 - Trends and Topics Related to ABET Accreditation

3:30 pm - 5:00 pm
103A, Convention Center
Moderator: Bala Maheswaran (Professor)
Speakers: Paul Benjamin Crilly (Professor), Baha Jassemnejad (Technical Manager), Harold T. Evensen (Professor of Engineering Physics), Evan C. Lemley (Professor and Assistant Dean) (University of Central Oklahoma)

An expert panel will discuss current topic and trends in ABET accreditation.

T85701 - ETD Technical Session 8 - ET Pedagogy II

3:30 pm - 5:00 pm
205B, Convention Center
Expanding Structural Engineering Education through Virtual Reality
Jenna Wong (Assistant Professor)
Shah Rukh Humayoun (San Francisco State University)

Student Learning and Confidence in a Technology Management Graduate Statistics Course
James David Kribs (Assistant Professor)

A Conscious Research Implementation: Research Integration in the Classroom
Yasmine Al Abdul Raheem
Joel Enrique Jarrett (Purdue University at West Lafayette (COE))
Anne M Lucietto (Associate Professor)
Enrique Barbieri (University of Houston)
The past, present, and upcoming program chairs discuss helpful tips and process for writing and reviewing PCEE Division 2023 Papers. We’ll discuss the rubrics and the various paper types: research to practice, evaluation, fundamental, resource exchange, work in progress and other. We will also give some helpful best practices on writing reviews that way authors can improve their submissions through the review cycle.

**T768 - Civil Engineering Division**
**- Is This Real? Reaching Students with Virtual and Augmented Reality**

3:30 pm - 5:00 pm
200E, Convention Center

*Moderators: Monica Palomo (Professor), Shinae Jang (Associate Professor in Residence, Director of Undergraduate Studies) (University of Connecticut)*

The proliferation of technologies that occurred during the pandemic has given us many ways to reach our students. This session is intended to spotlight particularly effective technologies using virtual and augmented reality to improve student learning in a variety of civil engineering courses. Papers provide helpful hints to duplicate and data on the student learning. These tools are effective in both remote and in-person learning.

**An infrastructure 3D-lab based on virtual visits at Call of Duty Warzone to Develop Student’s Competencies During the COVID-19 Pandemic**
Romeo Ballinas-gonzalez (Professor) (Tecnologico de Monterrey (ITESM))
Raul Garibay Macias (Tecnologico de Monterrey (ITESM))
Juan Pablo Garrido Masforrol (Tecnologico de Monterrey (ITESM))
Miguel X. Rodriguez-Paz (Professor, Head of Dept.) (Tecnologico de Monterrey (ITESM))

**Enhanced Learning of Load Path in a 3D Structural System using Virtual Reality**
Juan Andres Torres (University of Illinois at Urbana - Champaign)

Ann C Sychterz (Assistant Professor) (University of Illinois at Urbana - Champaign)
Jacob Henschen (Teaching Assistant Professor)

**A Case Study on Leveraging Augmented Reality for Visualization in Structural Design**
Ayatollah Yehia (PhD Student)
Jacqueline Chao (University of Virginia)
Connor Lyons (Undergraduate Student Researcher) (University of Virginia)
Mehrdad Shafiei Dizaji (University of Virginia)
Devin K. Harris (Professor) (University of Virginia)

**Virtual Reality Field Trip of a Steel Building Under Construction**
Edward Sippel
Hannah Blum

**TEACHING EARTH SYSTEMS BEYOND THE CLASSROOM: DEVELOPING A MIXED REALITY (XR) SANDBOX**
Damith Tennakoon
Aman U. Usmani (York University)
Muhammad Usman
Apostolos Vasileiou (York University)
Sasha Latchaev (York University)
Melanie Baljko (York University)
Usman T Khan (York University)
Matthew A Perras (Assistant Professor) (York University)
Mojgan A Jadidi (Assistant Professor)

**T9106 - CIT Division Technical Session #8**

3:30 pm - 5:00 pm
M101C, Convention Center

*Moderator: Friday Emmanuel James (Mr.)*

*Speakers: Juan Felipe Calderon (PhD. in Engineering Sciences (computer science)), Mercy Oluwadara Jaiyeola (Assistant Professor), Hashmath Fathima*

Following papers will be presented during this session.084: A Comparison Between Flipped Classroom and Emergency
Remote Teaching in SARS COV2 Pandemic. (Juan F. Calderon)


The Evolution of Multi-Site Combined REU/RET Program: From in Person to Virtual to Hybrid. (Hashmath Fatima)

Neural Network-Based Forecasting of Students Enrollment with Exponential Smoothing Baseline. (Friday Emmanuel James).

A comparison between flipped classroom, traditional, online and emergency response teaching in SARS COV2 Pandemic

Pablo Hernán Schwarzenberg (Universidad Andres Bello)
Juan Felipe Calderon (PhD. in Engineering Sciences (computer science))

A Longitudinal Analysis of Pathways to Computing Careers: Defining Broadening Participation in Computing (BPC) Success with a Rearview Lens

Mercy Oluwadara Jaiyeola (Assistant Professor)
Sarah B Lee (Director & Professor)

The Evolution of Multi-Site Combined REU/RET Program: From In-Person to Virtual to Hybrid

Kofi Nyarko (Associate Professor) (Morgan State University)
Tasmeer Alam (Morgan State University)
Hashmath Fathima
John Okyere Attia (Professor) (Prairie View A&M University)
Sacharia Albin (Professor) (Norfolk State University)

Neural Network-Based Forecasting of Student Enrollment With Exponential Smoothing Baseline and Performance Analysis

Friday Emmanuel James (Mr.)
Joshua Levi Weese (Teaching Assistant Professor) (Kansas State University)

Assessing Multidisciplinary, Long-Term Design Experiences

William C. Oakes (Director and Professor)
Paul A. Leidig
Andrew Pierce (Laboratory Manager) (Purdue University at West Lafayette (COE))

CubeSat Design Competition to Foster K-12 STEM Participation in Maine

Scott Joseph Eaton (Assistant Professor) (University of Southern Maine)
Warren H Ziegler (Space Technologist) (University of Southern Maine)
Daniel Fransiscus (University of Southern Maine)
Tyler D Werner

Competitions in Courses: Adding Value to Both Under-achieving and High-achieving Engineering Students

Sandra Furnbach Clavijo (Director of Core Education)
Louis Oh (Lab Manager) (Stevens Institute of Technology (School of Engineering and Science))

T91407 - DEED Business Meeting and Social

3:30 pm - 5:00 pm
101H, Convention Center

This is DEED’s annual business meeting; we will provide updates on the status of DEED, new programs, discuss any new projects or proposals and hold elections. We’re having a social for mingling with fellow DEED members, with light snacks and refreshments as the opening before getting into the business meeting. Hope you see you there!

T9173 - DEED Technical Session 5 Design Teams

3:30 pm - 5:00 pm
101I, Convention Center

Moderator: William C. Oakes (Director and Professor)

Augmented Reality for Sustainable Collaborative Design

Eunice Yujin Kang
Shulong Yan
Andrew Katz (Assistant Professor) (Virginia Polytechnic Institute and State University)

Avneet Hira (Assistant Professor) (Boston College)

T98 - College Industry Partnerships Division Technical Session 2

3:30 pm - 5:00 pm
203, Convention Center

Moderator: Soma Chakrabarti (Lead Education Outreach) (ANSYS - Granta Education Division)

Creating an Industry-Academia Partnership to Prepare the Workforce of the Future
What Employers Look for in New Engineering Graduates

Charles E. Baukal (Director)
Carter Stokeld
Linda Ann Thurman (Director of Student Prof. Dev. & Employer Relations)

Who’s on First? Solutions to the Communication Mismatch Found Between Employers and Students

Alyson Grace Eggleston
Robert J. Rabb (Chair, Mechanical Engineering)
Ronald W. Welch (Professor) (The Citadel)

Validity Evidence for Exposure and Motivation Scales in a Microelectronics Workforce Development Program

Adrian Nat Gentry
Eric Holloway (Sr Director - Industry Research) (Purdue University at West Lafayette (COE))
Peter Bermel (Purdue University at West Lafayette (COE))
Kerrie A Douglas (Assistant Professor of Engineering Education)

T7767 - Biomedical Engineering Division: Integrating Design Across the BioE/BME Curriculum

3:30 pm - 5:00 pm
206, Convention Center

Moderators: Katherine E Reuther (Practice Associate Professor), Bilal Ghosn

This Biomedical Engineering technical session will include four full-paper presentations from authors who have performed studies related to the integration of design across the bioengineering/biomedical engineering curriculum. Moderators may encourage small group discussion or other engaging activities with attendees related to this topic in the latter part of the session.

Integrating Universal Design and Accessibility into Bioengineering Curriculum
Alyssa Taylor

Integrating SolidWorks 3D Design and Simulation Modules into Introductory Biomedical Engineering Courses for the Development of Employability Skills
Mary S Jia (University of Arkansas)

Expansion of Biomedical Devices in an Engineering Design Project to Promote Student Wellness

Isabel Miller
Sara Rose Vohra
Calvin Costner (Advanced Design & Manufacturing Institute)
Karin Jensen (Prof.)
Holly M Golecki (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

Developing a Semester-Long Project in a Biomechanical Engineering Course to Instill the Entrepreneurial Mindset in the Next-Generation Biomedical Engineering Students

Loren Grace Hedgecock
Kaitlin Hall
Raj R. Rao (Professor and Department Head, Biomedical Engineering) (University of Arkansas)
Mostafa Elsaadany (Assistant Professor)

T53239 - WIED: Community

3:30 pm - 5:00 pm
200G, Convention Center

Moderators: Kimberly Stillmaker (Assistant Professor) (California State University, Fresno), Brian P Kirkmeyer (Karen Buchwald Wright Senior Assistant Dean for Student Success & Instructor) (Miami University)

Papers related to forming, enhancing, supporting, and embracing our WIED culture and community.

Investigating Tenure Experiences of Foreign-Born Women Faculty in Engineering at the XXX University System
Lalita G Oka (California State University, Fresno)
Sue Rosser
Maryam Nazari (California State University, Los Angeles)
Kira Abercromby (California Polytechnic State University, San Luis Obispo)

Sacrifice: Messages STEM Postdoctoral Scholar Women Receive about Career and Family
Sylvia L. Mendez (Professor/Chair)
Kathryn Watson (University of Colorado at Colorado Springs)
Valerie Martin Conley (Dean) (University of Colorado at Colorado Springs)
2022 ASEE ANNUAL CONFERENCE
TUESDAY, JUNE 28th SESSIONS

**Mirroring and Modeling an External Award Process; Structuring a Career Development Grants Program for Women at a Striving University**

Sharon Patricia Mason
Carol Elizabeth Marchetti (Professor) (Rochester Institute of Technology (COE))
Elizabeth Dell (Professor) (Rochester Institute of Technology (CET))

**Creating a collaborative cross-institutional culture to support STEM women of color and women with family responsibilities at four midwestern research institutions**

Cinzia Cervato (Iowa State University of Science and Technology)
Canan Bilen-Green (Vice Provost for Faculty and Equity)
Adrienne Minerick
Carla Koretsky
David W. Wahl (Iowa State University of Science and Technology)
Ann Burnett (Director of Women and Gender Studies) (North Dakota State University)
Lori Alicia Wingate (Western Michigan University)
Roger Green
D. Raj Raman (Morrill Professor) (Iowa State University of Science and Technology)
Gul Kremer
Sonia Goltz (Professor of Organizational Behavior)
Patricia Sotirin (Research Professor)

**Creating Sanctuary in Academia: Tales from the Pandemic**

Callie Miller (Visiting Assistant Professor)
Daniel Ivan Castaneda (Assistant Professor)
Melissa Aleman

**Women of Color in Emerging Technology: Breaking Down the Barriers**

Elodie Billionniere
Farzana Rahman (Syracuse University)

**T73300 - Celebration of the Year of Impact on Racial Equity**

3:30 pm - 5:00 pm
Lakeshore A, Hyatt Regency

*Moderator: Homero Murzi (Assistant Professor)*

*Speakers: Jeremi S London (Associate Professor), Elizabeth Litzler (Director) (University of Washington)*

Please join the Commission on Diversity, Equity, and Inclusion (CDEI) in celebrating the Year of Impact on Racial Equity. We will share the many successes of the year and discuss the plans to continue and expand upon this work into the future. You might just get to know some new colleagues who also care deeply about improving racial equity in engineering education.

**T75527 - FOCUS ON EXHIBITS: Summertime Social**

5:00 pm - 6:00 pm
Exhibit Hall B & C, Convention Center

Escape the heat with a late-afternoon treat! Nothing says summer like a refreshing glass of sweet, cold lemonade. Escape the hot June temps and see what’s hot on the Exhibit Hall Floor. This event is complimentary for all attendees.

**T56556 - Mechanics Division Awards Banquet**

7:00 pm - 9:00 pm
Crave, 825 Hennepin Ave, Minneapolis 55402

This is a ticketed session. To add this ticket to your registration, please click the button below. Enjoy a great meal with your mechanics colleagues, meet new fellow mechanics educators, and share in celebrating award honorees for best paper from this year’s conference and best presentation from last year’s conference. All are welcome.
T15343 - ERM Annual Community Celebration and Awards Reception (ERM Social Event)

5:00 pm - 7:00 pm
101J, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below. Come hang out with old ERM friends and make new friends! Lots of networking and fun times with ERM here at the revamped ERM Annual Community Celebration and Awards Reception (ACCAR), aka the ERM Social Event. Coming back from COVID and virtual socials, we wanted this event to be set up for more socializing and networking, not just a sit-down dinner—so, snacks and drinks, but not a full meal. We’re hoping this will facilitate socializing and networking with folks and leaving the event with new friends to go find dinner after. We are working hard to make this a super-fun and welcoming event, so make sure to get your ticket and join us to celebrate good friends and ERM Award winners!

T342 - Construction and Architectural Division Social

7:00 pm - 9:00 pm
Sonora Mexican Kitchen & Bar; 1414 Nicollet Ave, Minneapolis, MN 55403

This is a ticketed session. To add this ticket to your registration, please click the button below. Dinner social for the Construction and Architectural Engineering Division.

T34480 - International Division Social

5:30 pm - 9:00 pm
Monello, 1115 2nd Ave S, Minneapolis, MN 55403

This is a ticketed session. To add this ticket to your registration, please click the button below. Please Select your menu options from the below link: https://forms.gle/h7Mh35S8JLC6RgbV8

T76353 - ChE Division Dinner

6:00 pm - 9:00 pm
Brit’s Pub, 1110 Nicollet Mall, Minneapolis Minnesota

This is a ticketed session. To add this ticket to your registration, please click the button below. Division dinner for the Chemical Engineering Division of ASEE. We will have a social hour, dinner, and award presentations.

T77348 - Civil Engineering Division Annual Awards Banquet

6:30 pm - 9:00 pm
Cafe Lurcat; 1624 Harmon Pl, Minneapolis, MN 55403

This is a ticketed session. To add this ticket to your registration, please click the button below. Join the division at our annual awards banquet to celebrate our members and their contributions to the division and civil engineering education. All members are welcome. Limited to 55 people.

T777352 - Biomedical Engineering Division (BED) Social and Awards Banquet

6:30 pm - 11:00 pm
None, Hells Kitchen

This is a ticketed session. To add this ticket to your registration, please click the button below. This is a social event and awards banquet for the Biomedical Engineering Division (BED).

T21345 - ASEE LEAD Social

7:00 pm - 9:00 pm
Greenway FGH, Hyatt Regency

Come join us at our annual social after the business meeting.

T22359 - ELD Annual Banquet

7:00 pm - 9:00 pm
By Invite Only. Reservations available through the ELD
Annual Banquet for the ELD members. Location details and RSVP will be sent on the ELD-L email discussion list (see https://sites.asee.org/eld/).

The Energy Conversion, Conservation, and Nuclear Engineering Division (ECCNED)

7:00 pm - 9:00 pm

Lakes & Legends Brewing Company; 1368 Lasalle Ave. Minneapolis, MN 55403

Join the Energy Conversion, Conservation, and Nuclear Engineering Division (ECCNED) for dinner at a local restaurant (to be announced).

T2472 - Aerospace Division Social Event

7:00 pm - 9:00 pm

Greenway ABIJ, Hyatt Regency

T25350 - Entrepreneurship and Engineering Innovation Division Social Sponsored by Engineering Unleashed

7:00 pm - 9:00 pm

Northstar B, Hyatt Regency

Speakers: Jason Forsyth (Associate Professor of Engineering), Julia M. Williams (Professor of English), Sandra Furnbach Clavijo (Director of Core Education)

ENT Division Social to include poster session of best paper awardees and KEEN partner institution. Best paper in ENT division will be announced during the social.

T27360 - Faculty Development Division Social

7:00 pm - 9:00 pm

Nicollet C, Hyatt Regency

Speakers: Homero Murzi (Assistant Professor), Margret Hjalmarsen (Program Director)

This is a ticketed session. To add this ticket to your registration, please click the button below. Join us for our annual division social event!

T363 - Electrical and Computer Engineering Division Social/Dinner

7:00 pm - 9:00 pm

Northwoods, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below. Come join your ECE Division friends and colleagues as we catch up in-person after a couple of years. We would love to see you at the division dinner and social on Tuesday evening. Dinner will be hosted in the Northwoods room of Hyatt Regency, the conference hotel. In an effort to increase engagement in the ECE Division of first time attendees and student members, the first 10 FIRST-TIME ATTENDEES and STUDENT MEMBERS CAN ATTEND THIS EVENT FOR FREE. If you are an ECE Member and either a first-time attendee or a student member, do not register here and instead email the program chair, Dr. Amardeep Kaur (akaur@siue.edu) to secure your place within the first 10 eligible members to attend the dinner/social for free. The ASEE team will process your registration separately and the event will show up on your final schedule. Thanks to the PIC Special Project funds for providing the ECE division with the opportunity to welcome 10 first-time attendees and student members to this event for free. The reservations are first-come, first-serve basis. If you are reading this message, then there are slots remaining for eligible members.

T36357 - Manufacturing Division Social Event

7:00 pm - 9:00 pm

Glueks Bar and Restaurant 16 N 6th St Minneapolis, MN 55403

This is a ticketed session. To add this ticket to your registration, please click the button below. Manufacturing Division off-site social event. Location TBD.
T37550 - Materials Division Social
7:00 pm - 9:00 pm
Lakes & Legends Brewing Company; 1368 Lasalle Ave. Minneapolis, MN 55403

T19346 - Engineering Design Graphics Division Social
7:00 pm - 9:00 pm
Pending
This is a ticketed session. To add this ticket to your registration, please click the button below. Join the Engineering Design Graphics Division as our annual social event returns.

T86362 - NEE Social
7:00 pm - 9:00 pm
Unleashed Hounds and Hops; 200 East Lyndale Ave N. Minneapolis MN
Moderators: Rossana Villa Rojas (Assistant Professor of Practice), Derek Breid
Speaker: Ashish D Borgaonkar (Assistant Professor)
This is a ticketed session. To add this ticket to your registration, please click the button below. Join our social event, network with new and established faculty and recognize the division paper winners. Time: 7 pm Venue: Unleashed Hounds & Hops 200 East Lyndale Ave N Minneapolis MN 55405. Food and drinks will be available for purchase.

T8408 - Community Engagement Division Business Meeting
7:00 pm - 9:00 pm
M100FG, Convention Center
CED Business Meeting

T82541 - Institutional Council Reception (by Invitation Only)
7:00 pm - 8:30 pm

Seasons, Convention Center
This is a ticketed session. To add this ticket to your registration, please click the button below. By invitation only.

T55355 - Ethics Division Social Event
7:00 pm - 9:00 pm
Pending
This is a ticketed session. To gain access, purchase this session in Impexium. The Engineering Ethics Division invites you to continue the conversation with a social gathering on Monday night of the 2022 Annual Conference.

T45349 - EE/EM/IE/SE Joint Banquet
7:00 pm - 9:00 pm
Lakeshore A, Hyatt Regency
This is a ticketed session. To add this ticket to your registration, please click the button below. Join us to catch up with friends, make new friends, and celebrate award winners from the Engineering Economy, Engineering Management, Industrial Engineering, and Systems Engineering Divisions.
W175304 - 2022/2023 BoD Photo Shoot
7:00 am - 8:00 am
Regency Ballroom, Hyatt Regency

W175578 - Prayer Breakfast
7:00 am - 8:00 am
Minnehaha, Hyatt Regency

Please join Christian faculty and staff for our annual prayer breakfast at the ASEE Conference on Wednesday morning of this year’s conference. We meet to discuss challenges facing Christian faculty and staff in academia, in living their faith, and in sharing their faith in today’s academic environment. In addition to sharing our experiences, we have invited a speaker to provide challenge and wisdom, Dr. Laura Bottomley, a colleague from North Carolina State University. Though the theme is the challenges facing Christian faculty and staff, anyone attending this ASEE conference is welcome to attend this Prayer Breakfast. We will enjoy making new friends at this breakfast and renewing our old friendships. Please bring your own coffee and light breakfast items if you like. There is no catering for this session. Then plan to meet with us to begin the conference’s last day.

Laura Bottomley, ASEE Fellow, is the Director of Women in Engineering and The Engineering Place for K-20 Outreach and an Associate Teaching Professor in the Colleges of Engineering and Education at NC State University. She teaches an Introduction to Engineering class for incoming freshmen in the College and "Children Design, Invent, Create," a course for elementary education students that introduces them to engineering design and technology as well as various electrical engineering classes. In 2009 Dr. Bottomley was selected for a Presidential Award for Excellence in Mathematics, Science, and Engineering Mentoring by the White House Office of Science and Technology Policy and by the Educational Activities Board of the IEEE for an Informal Education Award. She was also inducted into the YWCA Academy of Women in 2008 for her contributions to eliminating racism and empowering women and was selected as the 2011 Woman of the Year by the RTP chapter of Women in Transportation. In 2013 she was named one of 125 Transformational Women by NC State University. Dr. Bottomley received her bachelor's and master's degrees in electrical engineering from Virginia Tech in 1984 and 1985, respectively. She received her Ph.D. in electrical engineering from NC State in 1992. She has previously worked at AT&T Bell Labs on ISDN standards and Duke University teaching classes and directing a lab in the electrical engineering department.

W175629 - Yoga
7:00 am - 7:45 am
Exhibit Hall B & C Foyer, Convention Center

Join your friends and colleagues as we jump-start our day with a renewing stretch and meditation class!

W185465 - ETD - Tau Alpha Pi Meeting
7:00 am - 8:00 am
M100A, Convention Center

Tau Alpha Pi is the national honor society for engineering technology. Founded in 1953 and managed for more than 30 years by engineering technology educator Frederick J. Berger, Tau Alpha Pi is open to both associate-degree and baccalaureate candidates. Tau Alpha Pi membership is open to top-performing associate-degree and baccalaureate students in engineering technology programs. Induction requires nomination by a local chapter and, to be eligible, students must meet the requirements of their local chapter. These are designed such that every inductee is academically in at least the upper twenty-five percent of their class. The purpose of Tau Alpha Pi is to recognize high standards of scholarship among students in engineering technology programs, to promote and encourage scholastic achievement by offering outstanding engineering technology students membership in the society. The society rewards selected scholars for past achievements and accomplishments, while encouraging a lifetime of commitment to learning and scholarship. Tau Alpha Pi members are truly interested in furthering and improving the academic life for all engineering technology students and in promoting the engineering/engineering technology departments at their own institutions. Since 1993, Tau Alpha Pi has been administered by the American Society for Engineering Education (ASEE). Tau Alpha Pi is a member of the Association of College Honor Societies. http://taualphapi.org/

W190474 - Systems Engineering
**Business Meeting**

7:00 am - 8:00 am  
M100B, Convention Center

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**W255219 - Engineering Ethics Division: Ethics Education Assessment**

8:00 am - 9:30 am  
200C, Convention Center

**Moderator:** Yang Victoria Shao (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

Assessing Engineering Student’s Representation and Identification of Ethical Dilemmas through Concept Maps and Role-Plays  
Ashish Hingle  
Aditya Johri (Professor)

Measuring Academic Integrity Perceptions and the Correlation with Ethical Reasoning  
Matthew G. Green (Associate Dean & Professor) (LeTourneau University)  
David Brian Dittenber (Associate Professor, Civil Engineering) (Cedarville University)

Exploring the Relations between Ethical Reasoning and Moral Intuitions among First-Year Engineering Students across Cultures  
Rockwell Clancy  
Qin Zhu (Assistant Professor) (Colorado School of Mines)  
Scott Streiner (Visiting Assistant Professor, Industrial Engineering Department)

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**W256444 - Remote and Flipped Instruction in Mechanics**

8:00 am - 9:30 am  
101F, Convention Center

**Moderators:** Hadas Ritz (Senior Lecturer), Amir Hossein Danesh Yazdi (Assistant Professor of Mechanical Engineering)

If you want to learn more about flipped and remote classes in mechanics, then this is the session for you.

The Influence of Remote Instruction on Student Situational Motivation  
Jennifer E. Holte (12-Month Adjunct Professor) (University of St. Thomas)

From Online to Hybrid: The Evolution of Flipped Learning in a First-Year Engineering Mechanics Course  
Rania Al-hammoud (Dr.)  
Kylie Wan Yue Chan (University of Waterloo)

Comparing the Effects of In-Person and Remote Learning on Student Performance in an Undergraduate Introductory Statics and Mechanics of Materials Course  
Hayden Richards (United States Air Force Academy)

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**W284166 - Engineering Physics and Physics Division Technical Session 3**

8:00 am - 9:30 am  
103A, Convention Center

**Moderator:** Evan C. Lemley (Professor and Assistant Dean) (University of Central Oklahoma)

Specifications Grading in General Physics and Engineering Physics Courses  
Harold T. Evensen (Professor of Engineering Physics)

Hydropower from Gutters: Generating Electricity from Rainwater  
Bala Maheswaran (Professor)  
Andrew Bard (Northeastern University)  
Andrew Charles Sozio  
Samuel Wesley Haggans (Northeastern University)  
Nicholas Joseph Tarallo (Northeastern University)  
Timothy Orlean Bennett (Northeastern University)

Incorporation of Matching Networks Fundamentals into State-of-the-Art Technology for Electrical Engineering Designs in General and RF-Microwaves Circuits in Particular using Smith Charts and MATLAB  
Kanti Prasad (Professor)  
Abdul Syed (University of Massachusetts Lowell)

A Low-Cost, Portable, Smartphone Schlieren Imaging System  
Keith Robert Stein (Dr.) (Bethel University)  
Grace Riermann

**PHYSICS APPLICATIONS: THEIR IMPACT ON STUDENTS’ MOTIVATION AND PERSPECTIVE OF STEM**  
Monica Daniela Hernandez-sanchez (Ing.) (Tecnologico de Monterrey (ITESM))
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Sally Macias-Gonzalez (Tecnologico de Monterrey (ITESM))
Erick Iturbe-Sanchez
Armando de Jesús Barragán-Cruz (Tecnologico de Monterrey (ITESM))
Luis Horacio Hernandez Carrasco (Ing)

Self-Charging Heated Gloves: Physics of Mechanical Motion towards Energy Generation
Bala Maheswaran (Professor)
Laetitia Khlat (Northeastern University)

W285466 - ETD - Engineering Technology National Forum
8:00 am - 9:30 am
M100FG, Convention Center

In February 2009, the Engineering Technology Division (ETD) and the Engineering Technology Council (ETC), in conjunction with the College Industry Partnership (CIP) Division of ASEE, held a National Forum to launch a new strategic initiative to help engineering technology (ET) programs across the country enhance their ability to provide applied engineering talent for the future. The three groups invited ASEE corporate partners to the table to strategize on what initiatives might be pursued to make the largest positive impact on the current and eminent pool of graduates being educated for future technical positions. Several opening presentations were given to set the stage for the dialog, and then a brainstorming session was held to generate ideas. Forty-five distinct tasks were proposed by the group and recorded for future vetting and refinement. To institutionalize this effort, the Engineering Technology Council is now establishing a standing committee to direct the continued efforts of the ET National Forum and collaborations with other entities such as ETD and ETLI. This page is a repository for information and deliverables that have been created as part of the National Forum: https://www.engtech.org/et-national-forum.

Moderator: Elizabeth Sanders (Graduate Student)

Event Related Potentials (ERP) Study to Understand Function to Object Mapping for Engineering Student
Megan Marshall
Md Tanvir Ahad
Mehri Elizabeth Mobarak-oomoumi
Tess Madeline Hartog (Student) (University of Oklahoma)
Zahed Siddique (Professor) (University of Oklahoma)

Producibility and Future Artifacts: Students Considering Manufacturing Lightsabers, Magic Wands, and Other Fantastical Products
Jarod White
Micah Lande (Assistant Professor)

Surfaceing Students Design Problem Understanding through System Mapping: A Novice-Expert Comparison
Corey T Schimpf (Assistant Professor)
Andrew Olewnik (Assistant Professor)

W291174 - DEED Technical Session 6 Design Pedagogy
8:00 am - 9:30 am
101I, Convention Center

Moderator: Cecilia La Place

Supporting sustainable design through holistic situated learning: A case study in transdisciplinarity
Linda Vanasupa (Professor of Materials Engineering)
Olivia Seitelman (Franklin W. Olin College of Engineering)
Stella Stark (Franklin W. Olin College of Engineering)
elizabeth west

Virtual Hands-on Learning – The development of an online engineering design course with a virtual product inspection portal
Caitlin Knowles (PhD Student) (North Carolina State University)
2022 ASEE ANNUAL CONFERENCE
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ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Validating Guerra’s Blended Flexible Learning framework for Engineering Courses
Miguelandres Guerra (Civil Engineering and Architecture)

Work In Progress: Designing a Learning Coach’s Playbook
Paul A. Leidig
Robin Adams (Dr.) (Purdue University at West Lafayette (COE))

Range of Practices of Sustainability Incorporation into First-Year General Engineering Design Course
Joan Tisdale
Angela R Bielefeldt (Professor)
Katherine Ramos (Teaching Assistant Professor) (University of Colorado Boulder)
Rebecca Komarek

W2593 - SPONSOR TECH
SESSION 5 (TBD)
8:00 am - 9:30 am
101A, Convention Center

W2610 - SPONSOR TECH
8:00 am - 9:30 am
101B, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below. Join McGraw Hill and engineering mechanics faculty for a discussion on how eResources can be used to help advance student learning. What does the engagement need to look like and how does that impact the cost-benefit analysis on an instructor’s time to spend helping students

W26123 - Assessment in Chemical Engineering Education
8:00 am - 9:30 am
200A, Convention Center

Assessment of Changes in Confidence and Judgements of Problem-Solving Processes in Senior Level Chemical Engineering Students
Sheima Khatib (Texas Tech University)
Jessica C Pittman (Texas Tech University)
Roman Taraban (Professor)

The Effects of Prior Knowledge on Learning with Low-Cost Desktop Learning Modules
Carah Elyssa Watson
Jacqueline Gartner (Assistant Professor)
Bernard J. Van Wie (Professor)
Prashanta Dutta (Professor) (Washington State University)
Olusola Adesope (Professor)
Heidi Curtis (Campbell University)

ConcepTest Questions Created By Students For Students: Improving Student Learning And Addressing A Need In Process Control
Luke Landherr

Consequential Agency in Chemical Engineering Laboratory Courses
Madalyn Wilson-fetrow (Graduate Student Researcher) (University of New Mexico)
Vanessa Svihla
Stephanie G Wettstein (Associate Professor)
Jennifer R Brown (Associate Professor)
Eva Chi (Professor) (University of New Mexico)

Contextualized Self-Regulated Learning: Chemical Engineering Students’ Learning Experiences in a Materials and Energy Balances Course
Araoluwa Adaramola
Allison Godwin (Associate Professor)

Can I have More Problems to Practice? Part 2. Student Success Related to Auto-graded, End-of-chapter YouTube Problems in a Material and Energy Balances Course
Matthew W Liberatore (Professor of Chemical Engineering, Interactive textbook author)
Kayla Chapman
W27211 - Civil Engineering Division - The New Normal: Enduring Technology Improvements in the Classroom

8:00 am - 9:30 am
200E, Convention Center

Moderators: Haritha Malladi (Assistant Professor and Director of First-Year Engineering), Aaron T Hill (Colonel, US Army)

The rapid transition to virtual learning experiences due to the COVID-19 pandemic resulted in some positive side effects: faculty were required to become much more adept at implementing technology into their classrooms. While not all of these interventions were successful, some activities proved to be superior at engaging students in the classroom. This session includes papers highlighting effective implementation of technology in the CE classroom, what we should keep and why we can’t go back to pre-COVID methods.

Are the Technological Tools used in Virtual and Hybrid Classrooms Still Useful in a Fully In-Person Setting? An Assessment of the Effectiveness of the Technological Tools in Enhancing the Pedagogy in the New Normal

Mousumi Roy
Manish Roy (Assistant Professor in Residence) (University of Connecticut)

Cloud technologies for scalable engagement and learning in flipped classrooms

Sotiria Koloutsou-vakakis (Dr.)
Christopher Tessum
Eleftheria Kontou
Hadi Meidani
Lei Zhao

We Can’t Go Back: Student Perceptions and Remote Learning Protocols

Alyson Grace Eggleston
Robert J. Rabb (Chair, Mechanical Engineering)
Ronald W. Welch (Professor) (The Citadel)

Implementing Digital Learning to Enhance Post-Pandemic Civil Engineering Teaching

Amanda Bao (Associate Professor) (Rochester Institute of Technology (CET))

From In-Person to Remote to Hybrid: Transitioning of an

W273291 - Safe Zone Ally Training - Level 3

8:00 am - 9:30 am
Lakeshore A, Hyatt Regency

Speakers: Tiago Forin, Anthony Butterfield (Associate Professor (Lecturing)), Colleen Elizabeth Bronner (Assistant Professor of Teaching)

Safe Zone Workshops are interactive, research-informed workshops for students, faculty, and the professional community, during which participants will build the knowledge and skills needed to create a more inclusive and affirming environment for LGBTQIA+ individuals in engineering. The workshops have been developed by a community of science and engineering professionals and students, specifically for a STEM audience. Faculty, students, administrators, staff, and other professionals are encouraged to participate in these workshops. The Safe Zone Level 3 Trans Allyship workshop explores transgender-specific terms and concepts, the climate for trans individuals in society and in STEM and its broader implications, and action strategies for trans allies. ASEE Safe Zone Ally Training workshops are supported by the National Science Foundation through grants EEC-1539140 and EEC-1748499. To learn more and access free ally resources, please visit https://lgbtq.asee.org.

W273667 - Diversity, Equity, and Inclusion: 200

8:00 am - 9:30 am
Lakeshore B, Hyatt Regency

Speakers: Meagan Pollock, Fantasi Nicole Curry (1st Year Doctoral Student)

Diversity, equity, and inclusion starts with us, but individual awareness and action are not enough. In order to transform our institutions and organizations to be more diverse, equitable, and inclusive, we must understand the larger systems we construct, operate within, and sustain. In this session, we will introduce a systems-thinking framework through case study analysis to assist us in identifying
organizational successes and opportunities for improvement as we become catalysts for institutional change. We aim to raise the collective awareness of institutional biases to promote shared accountability to create equitable engineering education communities at every organizational level.

**W275309 - ASEE Accreditation Activities Committee**

8:00 am - 9:30 am
M100B, Convention Center

**W275574 - ASEE Member Feedback on New Website, Business, and Paper Management Systems**

8:00 am - 9:30 am
Ballroom A, Convention Center

ASEE Member Feedback on New Website, Business, and Paper Management Systems

**W275583 - Registration**

8:00 am - 4:00 am
Exhibit Hall B & C, Convention Center

**W275641 - ASEE Projects Board Meeting**

8:00 am - 9:30 am
M100A, Convention Center

**W275704 - Exhibit Hall**

8:00 am - 11:15 am
Exhibit Hall B & C, Convention Center

**W277273 - Biomedical Engineering Division: Business Meeting**

8:00 am - 9:30 am
Mirage, Hyatt Regency

Moderators: Aileen Huang-saad (Associate Professor), Renata Fortuna Ramos (Rice University)

Learn about the current and upcoming business of the Biomedical Engineering Division, and vote for new officers!

**W29227 - CIT Division Technical Session #9**

8:00 am - 9:30 am
M101C, Convention Center

Moderator: Mudasser Fraz Wyne (Professor)
Speakers: Stephen Mujeye, Tamara Nelson-Fromm, Xiong Wang (Dr), Bassam Alshammari

The following papers will be presented during this session:


100: A Metro Map-Based Curriculum Visualization for Examining Interrelated Curricula. (Tamara Nelson-Fromm)

108: Programmable Network-based Hands-on Course Projects. (Xiong Wang)


An analysis of differences in behaviors and practices of security-conscious users and regular users on mobile devices.

Stephen Mujeye

**Work In Progress: A Metro Map-Based Curriculum Visualization for Examining Interrelated Curricula**

Tamara Nelson-Fromm

Wade Fagen-ulmschneider (Teaching Associate Professor) (University of Illinois at Urbana - Champaign)

**Introducing Deep Learning on Edge Devices Using A Line Follower Robot**

Bassam Alshammari
Erik Mayer
Zachariah D Woods (Pittsburg State University)
Austin Taylor Smith (Pittsburg State University)
Estevan Hernandez (Pittsburg State University)
Kevin Birk
W293117 - Two-Year College Potpourri

8:00 am - 9:30 am
102E, Convention Center

Moderator: Edris Ebrahimzadeh (Professor) (Des Moines Area Community College)

A potpourri of topics aimed at those teaching engineering and engineering technology at two-year colleges

The Mist Shrouding Community College
- Diego Reyes
- Brooke Charae Coley (Assistant Professor)

Managing the Challenges of Recruiting and Supporting S-STEM Scholars at Three Partnering Community Colleges During a Pandemic
- Ricky T Castles (Associate Professor)
- Chris Venters
- Charles Edward Goodman

Mixed Reality for fluid power instruction
- Marvin Raymundo Durango Cogollo (Purdue University at West Lafayette (COE))
- Jose Garcia
- Brittany Newell
- Farid Breidi (Dr.) (Purdue University at West Lafayette (PPI))

Industry 4.0 or the Industrial Internet of Things (IIoT) - its future impact on two-year engineering technology education
- Gary J. Mullett (Professor & Dept. Chair)

Theory to Practice: Professional Development for Culturally Responsive Technician Education
- Cynthia Kay Pickering (SF Az Fellow)

Laurie S. Miller McNeill (Director of Institutional Advancement) (Westchester Community College)
- Mara Lopez
- Juan R Rodriguez (Professor) (Westchester Community College)
- Sarah Belknap (Instructor Of Mathematics) (Westchester Community College)
- Elaine L. Craft (Principal Investigator, NSF ATE grants) (Florence-Darlington Technical College)
- Caroline Vaningen-dunn (Director)

W2136 - ECE Division Technical Session 8: Effective Teaching and Learning in Post-Pandemic Classrooms and Other Curricular Innovations

8:00 am - 9:30 am
207, Convention Center

Moderators: Leonard J. Bohmann (Associate Dean for Academic Affairs) (Michigan Technological University), Yang Victoria Shao (Teaching Assistant Professor) (University of Illinois at Urbana - Champaign)

Using Six Sigma to Improve Student Teamwork Experience and Academic Performance in Circuits Analysis Course
- Adel W. Al Weshah (Lecturer)
- Ruba Alamad (Assistant Professor) (Kennesaw State University)

Evaluation of Student Preparedness for Returning to In-Person Laboratory Courses
- Christina Phillips (University of Massachusetts Lowell)
- Dohn A Bowden (ECE Lab Manager) (University of Massachusetts Lowell)

Teaching and Learning during COVID: Lessons Learned and Future Impacts
- Asad Azemi (Professor) (University of Wisconsin - Platteville)
- Xiaoguang Ma (Assistant Professor) (University of Wisconsin - Platteville)
- John Goomey (Senior Lecturer) (University of Wisconsin - Platteville)

From Online to In-person Electrical Circuits Laboratories sessions: Benefits, limitations, and challenges
- Martha L Torres (University of Texas at El Paso)
- Hector Erives (Associate Professor of Practice) (University of Texas at El Paso)
- Virgilio Ernesto Gonzalez (Professor of Practice) (University of
The following sessions were presented during the conference:

**Challenges with Online Teaching and Learnings for the Post-Pandemic Classroom**
- Tyler Gamvrelis (University of Toronto)
- Hamid Timorabadi

**Entrepreneurial Mindset Learning (EML) Activities in a Digital Logic Course**
- Firas Hassan (Assistant Professor) (Ohio Northern University)
- Ahmed Ammar (Ohio Northern University)
- Heath Joseph LeBlanc (Ohio Northern University)

**W2154 - ERM: Self-Efficacy, Motivation, and MORE!**
8:00 am - 9:30 am
Nicollet A, Hyatt Regency
Moderators: Yucheng Liu (Department Head and Endowed Professor), Aaron W. Johnson (Assistant Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Come hear about some work around self-efficacy, motivation, and more by ERM authors!

**Fundamental Engineering Course Test Beliefs and Behaviors: A Case Exploration of One Instructor**
- Kai Jun Chew (PhD Student)
- Holly M Matusovich (Associate Professor) (Virginia Polytechnic Institute and State University)

**Preparing Prospective Engineers for Artemis: Analyzing the Efficacy of MOOCs in a Specific Area of Expertise (WIP)**
- Joselyn Elisabeth Busato
- Elif Miskioglu (Assistant Professor)
- Kaela M Martin
- Davide Guzzetti

**Noncognitive Predictors of Engineering Persistence for C-in-Math Students: Exploring the Generalizability of Lasso Regression**
- Campbell R Bego (Assistant Professor)
- Jeffrey Lloyd Hieb (University of Louisville)
- Jody Zhong (Graduate Assistant) (University of Louisville)
- Patricia A Ralston (Professor) (University of Louisville)
- Thomas Tretter

**Work in Progress: Developing an Engineering Community in a Fablab**
- Jan Edwards (Associate Professor) (College of Lake County)
- ANA KAREN PIZANO (Lead Research Analyst) (College of Lake County)

**W2155 - ERM: Let’s Continue the Conversation about Tests! Part 2**
8:00 am - 9:30 am
201, Convention Center
Moderators: Cheryl Lynn Resch (Lecturer), Elizabeth Cady (Senior Program Officer)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Interested in learning about innovative practices and research around tests? So are these authors! Come check out their work.

**First-Year Engineering Student Perceptions of Calculus Exams and Future-Oriented Motivation**
- Catherine Mary Kenyon
- Lisa Benson (Professor)

**Efficacy of the Dual-Submission Homework Method**
- Joshua Laurence Jay
- Doyle Dodd (Assistant Professor of Practice)

**Using pupil dilation to measure cognitive load during a spatial skills test**
- Gibin Raju
- Sheryl A. Sorby (Professor) (University of Cincinnati)
- Grace Panther (Assistant Professor)
- Clodagh Reid (Dr)
- Luke David Fisher (University of Cincinnati)

**Assessing Head- Hand- and Heart-Related Competencies through Augmented-Reality**
- Logan Andrew Perry (Assistant Professor of Engineering Education)
2022 ASEE ANNUAL CONFERENCE
WEDNESDAY, JUNE 29th SESSIONS

Jeremi S London (Associate Professor)
Steven K Ayer
Kieren H. McCord (Student) (Arizona State University)

Metacognitive Strategies for Homework Grading: Improving Learning while Saving Time and Decreasing Cheating
Edward F. Gehringer (Professor) (North Carolina State University at Raleigh)

W2168 - Technological and Engineering Literacy/Philosophy of Engineering Division Technical Session 3
8:00 am - 9:30 am
102D, Convention Center

Victims of Outcomes: Towards an Enactivist Model of Technological Literacy
Alan Cheville (Professor)
John Heywood

Laying the Foundation for Education 4.0: Access, Value and Accountability
Jennifer Karlin (Professor)
L. Eric James (Adjunct Professor, Engineering Management) (Minnesota State University, Mankato)
Lauren Singelmann
Dan Ewert

Does Engineering need Technological Literacy? Does Technological Literacy Need Engineering?
Mani Mina (Iowa State University of Science and Technology)

Technological literacy: Subject or Pedagogy. Implications for liberal education
John Heywood
Alan Cheville (Professor)

On the similarities and contrasts between systems engineering terminologies
Reza Rahdar (Assistant Professor)
Yuetong Lin (Dr.)
Mark London (Adjunct Assistant Professor of Systems Engineering) (Embry-Riddle Aeronautical University - Worldwide)
A. Mehran Shahhosseini (Professor) (Indiana State University)

How Actor-Network Theory Travels and Changes in

Engineering Education: A Narrative Literature Review
Renato Alan Bezerra Rodrigues
Jillian Seniuk Cicek (Assistant Professor) (University of Manitoba)
Jeffrey Wayne Paul

W217330 - Advanced Energy Technologies
8:00 am - 9:30 am
102C, Convention Center

Moderators: Sandip Das, Robert J Kerestes
Speakers: Anveeksh Koneru, Charles E. Baukal (Director), Ryan James Milcarek (Assistant Professor) (Arizona State University), Ira Harkness (Instructional Assistant Professor) (University of Florida), Hector Medina

Panelists in this session will discuss teaching and student-centered research relating to advanced energy technologies such as nuclear, solar, hydrogen production, fuel cells, and energy storage.

W219218 - Engineering Design Graphics Division Technical Session 1
8:00 am - 9:30 am
205B, Convention Center

Lelli Van Den Einde (Dr.) (University of California, San Diego)
Nathan Delson (Professor)
Elizabeth Rose Cowan (eGrove Education)
Bahar Memarian (Postdoctoral Researcher)

Exploring the SOLIDWORKS® Certification Program
Rustin Webster
Joseph Rudy Ottway

CAD Instruction in the Time of COVID
Derek M Yip-hoi (Assistant Professor) (Western Washington University)

Reinforcing Design Intent with a Computer Grading Program
Steven Joseph Kirstukas (Professor)
Differences in perceived stress levels and measured stress while solving spatial tests

Gibin Raju
Sheryl A. Sorby (Professor) (University of Cincinnati)
Grace Panther (Assistant Professor)
Clodagh Reid (Dr)
Jasmine Haili Mogadam (University of Cincinnati)

### W2222 - Experimentation and Laboratory-Oriented Studies
Division Technical Session 5: Remote, Hands-On Laboratories

8:00 am - 9:30 am
205C, Convention Center

**Moderator: Robby Sanders (Associate Professor)**

This session will focus on development and implementation of virtual (remote) hands-on laboratories with emphasis on lab design and use of low-cost electronic equipment/devices.

- **UX design research for improving student experience in online laboratories**
  - Amy Ragland
  - Dominik May
  - Beshoy Morkos (Associate Professor)
  - Andrew Jackson (Assistant Professor)
  - Nathaniel Hunsu (University of Georgia)
  - Fred Richard Beyette (Professor and School Chair of Electrical & Computer Engineering)

- **Integrated Engineering Laboratories Utilizing an Arduino-Based Platform**
  - Michael Robinson (Assistant Professor of Engineering)

- **Leveraging ThingsBoard IoT Service for Remote Experimentation**
  - Ahmet Can Sabuncu (Assistant Teaching Professor)
  - Kerri Anne Thornton (Student / Lab Assistant & Teaching Assistant) (Worcester Polytechnic Institute)

- **Work-in-Progress: Internet of Things Enabling Remote Student Learning**
  - Lifford Mclauchlan (Associate Professor and Assistant Chair)
  - David Hicks
  - Mehrube Mehrubeoglu (Professor) (Texas A&M University - Corpus Christi)
  - G. Beate Zimmer (Associate Professor) (Texas A&M University - Corpus Christi)

### W222439 - Engineering Libraries
Technical Session 6: Diversity

8:00 am - 9:30 am
Greenway CDE, Hyatt Regency

**Moderator: Sarah Barbrow (Engineering Librarian)**

**Speakers:** Sarah Lester, Kelly Durkin Ruth, John B. Napp (Engineering Librarian), Jennifer Helen Obertacz, Eric Prosser (Engineering and Entrepreneurship Librarian)

This is a ticketed session. To add this ticket to your registration, please click the button below

- **Making Space for Students on the Autism Spectrum in the Academic Library**
  - John B. Napp (Engineering Librarian)
  - Jennifer Helen Obertacz

- **Creating a STEM Diversity Collection in an Academic Science and Engineering Library**
  - Eric Prosser (Engineering and Entrepreneurship Librarian)

- **Look Who’s Talking: Exploring the DEI STEM Librarianship Conversation**
  - Sarah Lester
  - Kelly Durkin Ruth

### W227264 - Faculty Development
Division Technical Session 4

8:00 am - 9:30 am
103B, Convention Center

**Moderator: Tershia A. Pinder-grover (Director of CRLT in Engineering) (University of Michigan)**

**Speaker: Homero Murzi (Assistant Professor)**

- **Engineering and the Fulbright U.S. Scholar Program A World of Opportunities**
  - John David Rice (Associate Professor) (Utah State University)
  - Steven Jones
WIP: Teams for Creating Opportunities for Revolutionizing the Preparation of Students (TCORPS) at the Department of Mechanical Engineering, Texas A&M University

Emma Edoga (Texas A&M University)
Mindy Bergman
M Cynthia Hipwell (Oscar S. Wyatt, Jr. & #39;45 Chair II Professor) (Texas A&M University)
David Christopher Seets (Professor of the Practice) (Texas A&M University)
Karan Watson (Provost Emeritus & Sr. Professor) (Texas A&M University)
Arun Srinivas

WIP: Incremental innovation training as a means for percolating faculty teaching culture change-A First Look

Rujun Gao (Texas A&M University)
M Cynthia Hipwell (Oscar S. Wyatt, Jr. & #39;45 Chair II Professor) (Texas A&M University)
David Christopher Seets (Professor of the Practice) (Texas A&M University)
Mindy Bergman
Arun Srinivas

WIP: Faculty Perceptions of Change Efforts in Department-Based Teaching Reform

Jill K Nelson (Associate Professor)
Jessica Rosenberg
Sarah N Ochs (George Mason University)

Work In Progress: Developing a Faculty Community of Practice to Support a Healthy Educational Ecosystem

Nancy Warter-Perez (California State University, Los Angeles)
Corin (Corey) Bowen
Jose Mijares (California State University, Los Angeles)
Daniel Galvan (Director of Acceleration Initiatives and Student Engagement) (California State University, Los Angeles)
Lizabeth L Thompson (Professor)
Gustavo B Menezes (Professor)

Moderators: Randy Hugh Brooks (Professor) (Texas A&M University), Olukemi Akintewe

Collaborative Teaching Model: Synergy of Teaching Assistants in a First-year Engineering Course During the Pandemic

Gerald Tembrevilla
Andre Phillion (Associate Professor) (McMaster University)
Shelir Ebrahimi (Dr.) (McMaster University)

What Do Undergraduate Engineering Students at the Onset of Emergency Hybrid Learning During COVID-19 Say About Peer Mentorship?

Darcie Christensen
Idalis Villanueva (Associate Professor)

The Evolution of Peer-Assisted Learning: From SI to PLUS

Katherine Dooley Molina-Gallo (University of Texas at Austin)
Nina Kamath Telang (Senior Lecturer)
Elliot Lopez-Finn (University of Texas at Austin)

College-Wide First Year and Career Mentorship Programs

Ronald S Harichandran (Dean) (University of New Haven)
Nadiye O. Erdil (Associate Professor)
Stephanie M Gillespie (Associate Dean) (University of New Haven)

Peer Mentors Forging a Path in Changing Times

Jill Davishahl (Assistant Professor and First Year Programs Director) (Western Washington University)
Audrey Boklage (Dr.) (University of Texas at Austin)
Madison E. Andrews (University of Texas at Austin)

W22885 - First-Year Programs Division Technical Session 3: Online Learning and the Impact of COVID-19

8:00 am - 9:30 am
213, Convention Center

Moderators: Qudsia Tahmina (Assistant Professor), Corey Kiassat, PhD, MBA, PE

Before and After: Team Development in Virtual and In-Person Transfer Student Engineering Design Teams

Natalie C.T. Van Tyne (Associate Professor of Practice)

Long-Term Impact of COVID-19 on the First-Year Engineering Experience at a Mid-Sized Teaching Focused University

Brian Dick (Professor & Chair)
Understanding Student Experiences in a First-Year Engineering Online Project-Based Learning (OPjBL) Course
Tahsin Mahmud Chowdhury (Graduate Assistant)
Juan David Ortega (Collegiate Assistant Professor) (Virginia Polytechnic Institute and State University)
Catherine Twymann (Instructor)
Matthew James (Associate Professor of Practice) (Virginia Polytechnic Institute and State University)
Benjamin Daniel Chambers (Associate Professor of Practice) (Virginia Polytechnic Institute and State University)

Launching a New Discipline-Specific First-Year Discovery Studio: Vision, Purpose, and Adaptation Amid Pandemic-Related Turbulence
Anna Newsome Holcomb (Lecturer)

Commuter Student Integration During COVID-19
Cory Brozina (Assistant Professor and Director of First Year Engineering)

W229225 - Graduate Studies Division Technical Session 3
8:00 am - 9:30 am
203, Convention Center

Building Effective Mentoring Relationships: Advancement of Mentoring Practice Program for Engineering Faculty Advisors and Doctoral Student Advisees
Ha Pho
Hsien-yuan Hsu (Assistant Professor) (University of Massachusetts Lowell)
Yanfen Li (Assistant Teaching Professor)

Writing in the Discipline (WRITE-D): A new approach to graduate student writing success
Jessica Daignault (Assistant Professor)
Audra Morse

How Do Engineering Education Graduate Students Perceive and Negotiate Disciplinary Expectations in Academic Writing?
Athena Lin (Graduate Student)

W23099 - Computers in Education 6 - Best of CoED
8:00 am - 9:30 am
206, Convention Center
Moderator: Steven F Barrett (Vice Provost Undergraduate Education)

This session will highlight the best of CoED submitted papers.

Development, Implementation, Refining and Revising of Adaptive Platform Lessons for an Engineering Course
Autar Kaw (Professor)
Ali Yalcin (Assistant Professor) (University of South Florida)
Rafael Braga Gomes (University of South Florida)
Luis Javier Serrano
Yingyan Lou (Assistant Professor) (Arizona State University)
Andrew Scott (Professor) (Alabama A&amp;M University)
Renée M Clark (Director of Assessment) (University of Pittsburgh)

Door-Alarm Lab: Integration of Engineering Design in a Simulation-based Learning Environment for Pre-Service Elementary Teachers
Zeynep Gonca Akdemir (Ms.)

Enhancing Undergraduate Civil Engineering Mechanics of Fluids Laboratory Experiences using Sensors and Computing Tools
Elma Annette Hernandez (Associate Dean for Undergraduate Studies &amp; Professor) (Texas Tech University)
Venkatesh Uddameri (Dr.) (Texas Tech University)
Ameri Gurley (Lecturer) (Texas Tech University)

Automated Zoom Chat Analysis Including Chat-Based Polls for an Online Introductory Programming Course
Frank Vahid (Professor) (University of California, Riverside)
Stanley Zhao (University of California, Riverside)
Joe Michael Allen (Student) (University of California, Riverside)

W235230 - LEES 4: Understanding and Disrupting Engineering Cultures
8:00 am - 9:30 am
200D, Convention Center
Moderator: Jenn Stroud Rossmann (Professor)
Speakers: Jennifer Radoff, Chandra Anne Turpen (Dr.) (University of Maryland College Park), Taiylor Rayford, David Tomblin (Director/Senior Lecturer) (University of Maryland College Park)

Educational Enrichment: The Benefits of Near-Peer Mentoring for Undergraduate Engineering Students
Taiylor Rayford
Nidia Ruedas-Gracia (Assistant Professor) (University of...
Illinois at Urbana - Champaign)
Molly H Goldstein (Assistant Teaching Professor) (University of Illinois at Urbana - Champaign)
Corey T Schimpf (Assistant Professor)
Lara Hebert (University of Illinois at Urbana - Champaign)
Lorena Escamilla (University of Illinois at Urbana - Champaign)
Jesus Jairo Zavala (University of Illinois at Urbana - Champaign)

STS Postures: Changing How Undergraduate Engineering Students Move Through the World
David Tomblin (Director/Senior Lecturer) (University of Maryland College Park)
Nicole Farkas Mogul (Professor & Assistant Director)

Partnering with undergraduate engineering students to unearth cultural practices within a Science, Technology, and Society (STS) program
Chandra Anne Turpen (Dr.) (University of Maryland College Park)
Jennifer Radoff
Paul Adkins (University of Maryland College Park)
Samshriha Raj Bikki
Keeron Zaid Rahman (University of Maryland College Park)
Harkirat Kaur Sangha

Examining the “narrow” and “expansive” socio-technical imaginaries influencing college students’ collaborative reasoning about a design scenario
Jennifer Radoff
Chandra Anne Turpen (Dr.) (University of Maryland College Park)
Fatima Naeem Abdurrahman (University of Maryland College Park)
David Tomblin (Director/Senior Lecturer) (University of Maryland College Park)
Amol Agrawal
Danjing Chen
Sona Chudamani

Arif Sirinterlikci
Leia Farroux (Robert Morris University)
Amanda Wolfe (Robert Morris University)

Manufacturing engagement: improving student learning through modifying content delivery and assessment
Joshua Gargac (Ohio Northern University)

Remote Machine Vision Lab Design and Evaluation using AI based Mobile Robot
Sheng-jen Hsieh (Professor) (Texas A&M University)

Flipped Classroom to increase the Student Success in Manufacturing Courses
Ismail Fidan (Professor)
Ankit Gupta (Mississippi Valley State University)
Seymur Hasanov
Alisa Jean Henrie (Clinical Assistant Professor) (The University of Alabama in Huntsville)
Perihan Fidan (Lecturer) (Tennessee Technological University)

W237233 - Materials Division Technical Session 3
8:00 am - 9:30 am
102F, Convention Center

Moderators: Soma Chakrabarti (Lead Education Outreach) (ANSYS - Granta Education Division), Robert Lindsey Lowe

Speakers: Brian Iezzi, Timothy Chambers, Yang Dan (University of Illinois at Urbana - Champaign), Nutnicha Nigon (Oregon State University), Jonathan R. Brown (Assistant Professor of Practice), Nicole Johnson-glauch (Dr)

Technical session for the Materials Division with talks focused on: Remote learning Design thinking

Conducting remote materials education and outreach with in-person communities: implementation and reflections
Brian Iezzi
Paul Chao (University of Michigan)
Kyle Bushick (University of Michigan)
Joshua Cooper
Tathya Shinde
Timothy Chambers

Impact of Transitions between Online and Offline Learning During COVID-19 on Computational Curricular Reform: Student Perspective
Yang Dan (University of Illinois at Urbana - Champaign)
Andre Schleife

W236449 - Remote Pedagogy in Manufacturing Education
8:00 am - 9:30 am
102B, Convention Center

Moderators: Aditya Akundi (Assistant Professor), Ismail Fidan (Professor)

Use of Interactive Digital Tools in Product Design and Manufacturing

Brian Iezzi
Paul Chao (University of Michigan)
Kyle Bushick (University of Michigan)
Joshua Cooper
Tathya Shinde
Timothy Chambers

Impact of Transitions between Online and Offline Learning During COVID-19 on Computational Curricular Reform: Student Perspective
Yang Dan (University of Illinois at Urbana - Champaign)
Andre Schleife
Comparing Expert Predictions to Student Performance on Challenging Conceptual Questions: Towards an Adaptive Learning Module for Materials Science

Nutnicha Nigon (Oregon State University)
Dana Simionescu (Oregon State University)
Thomas W Ekstedt (Analyst Programmer) (Oregon State University)
Julie Tucker
Milo Koretsky (McDonnell Family Bridge Professor)

Virtual adaptation of introductory materials engineering: a partially asynchronous approach to engage a large class

Jonathan R. Brown (Assistant Professor of Practice)
Janet M Meier (Graduate Research Associate) (The Ohio State University)
Brandon Free (The Ohio State University)
Jenifer (Warner) Locke (Assistant Professor) (The Ohio State University)

Describing Students’ Approach to Design Thinking in Introductory Materials Engineering Courses

Nicole Johnson-glauch (Lecturer)
Mohsen Beyramali Kivy (Assistant Professor) (California Polytechnic State University, San Luis Obispo)
Emily Haykoupian (California Polytechnic State University, San Luis Obispo)

Students Poor Exam Performance in an Engineering Course after Twenty Months of Online Instruction and Efforts to Improve

Amir Karimi
Randall D. Manteufel (Associate Professor) (The University of Texas at San Antonio)

W2400 - Cooperative and Experiential Education Division Business Meeting

8:00 am - 9:30 am
M100C, Convention Center

This session is open to anyone interested in learning more about CEED. Conference attendees with an interest in volunteering for the division or joining the board are especially encouraged to attend!

W241374 - Towards Enacting Hispanic-Servingness within Engineering

8:00 am - 9:30 am
Nicollet D1, Hyatt Regency

Unlike Historically Black Colleges and Universities and Tribal Colleges and Universities that were created with a mission to serve Black and Indigenous students and communities, Asian American and Native American Pacific Islander and Hispanic-Serving Institutions (HSIs) have mostly emerged from meeting enrollment thresholds at Historically and Predominantly White Institutions (10% and 25%, respectively). In an effort to understand “servingness” beyond enrollment thresholds, education scholars are...
beginning to theorize “servingness” within the context of enrollment-based minority-serving institutions (MSIs). Central to Garcia et al.’s (2019) multidimensional framework for understanding “servingness” are the organizational structures that support institutional transformation. The authors identify 11 structures, or levers of change, at an institution that can further an institution’s ability to enact “servingness,” including HSI grants, curriculum and pedagogy, and community-engaged research. Because of their role in broadening participation in STEM fields, and targeting of federal awards towards building capacity in STEM at HSIs, the goal of this special session is to bring attention to what it means to be Hispanic-Serving within the context of engineering. Objectives: Bring attention to the historical significance of HSIs in U.S. higher education Unpack the concept of “servingness” in relation to Latina/o/x and other marginalized groups who attend HSIs Provide examples of how federally funded projects are operationalizing “servingness” within the context of engineering

W245143 - EMD Technical Session 2: Diversity, Equity, and Inclusion
8:00 am - 9:30 am
102A, Convention Center

Learn how others are making engineering management more diverse, equitable, and inclusive.

“What’s getting in the way?” Personal and Professional Barriers to Engineering Leadership
- Cindy Rottmann (Associate Director Research)
- Emily Moore (Dr)
- Andrea Chan (Research Associate)
- Lee Weissling
- Dimpho Radebe (PhD Student) (University of Toronto)

Diversity, Equity, and Inclusion (DEI): A Conceptual Framework for Instruction and Learning the Geospatial Technology Competency Model (GTCM)
- Laramie Potts
- Huiran Jin

Research-based strategies for identifying and reducing bias against women leaders in an Engineering Management and Technology department, a literature review and case study
- Sandra Furterer

Exploratory Study of the Perceptions of Biasness, Inclusivity, and Team Dynamics in Entrepreneurship Education Training
- Joe Bradley (University of Illinois at Urbana - Champaign)

W75526 - FOCUS ON EXHIBITS:
Networking Break & NSF Grantees Poster Session
9:45 am - 11:15 am
Exhibit Hall B & C, Convention Center

ASEE’s exhibitors welcome you back for our final Networking Break in the Exhibit Hall. Whether it’s lab equipment, quality textbooks for your classes, or cutting-edge software, you’ll likely find something interesting in the hall. This event is complimentary for all attendees. Featuring the NSF Grantees Poster Session Please note: Posters are arranged alphabetically by Paper Title NSF Grantees Poster Session Board Assignments

W590 - SPONSOR TECH SESSION 6 (TBD)
9:45 am - 11:15 am
101B, Convention Center

W15674 - ERM: ERM Medley Session!
9:45 am - 11:15 Am
201, Convention Center

Moderators: Natalie C.T. Van Tyne (Associate Professor of Practice), David Reeping (Assistant Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Can’t decide what you’re interested in hearing about? This session has a variety! Come hit the highlights across a number of topics.

University Engineering Instructors’ Expressions of Individual Adaptability During a Semester of Emergency Remote Teaching
- Yashin Brijmohan (Mr)
- Grace Panther (Assistant Professor)
- Heidi A. Diefes-Dux (Professor)
Development of a Middle School Architectural Engineering Pilot Program (Work in Progress)
  Tina Wang
  Laura Jun Chee Yong (Pennsylvania State University)
  Linda M Hanagan (Associate Professor of Architectural Engineering) (Pennsylvania State University)
  Allison Godwin (Associate Professor)

Human-Swarm Interaction Robotics as Context for Training Diverse Undergraduate Researchers
  Reagan Curtis (Professor)
  Evana Nusrat Dooty (West Virginia University)
  Sumaia Ali Raisa (West Virginia University)
  Jason N. Gross (Assistant Professor) (West Virginia University)
  Yu Gu (Assistant Professor) (West Virginia University)

Activating First-Year Engineering Students’ Conation to Learn
  Khairiyah Mohd-Yusof (Professor and Fellow, Centre for Engineering Education)
  Nur Shahira Binti Samsuri
  Maizam Alias (Dr.)
  Akbariah Ary Mohd Mahdzir (Dr.) (Universiti Teknologi Malaysia)

Emergent Engineering Judgment: Making Assumptions in Engineering Science Homework (Research)
  Karen Miel (Tufts University)
  Jessica Swenson
  Aaron W. Johnson (Assistant Professor)

The Influence of Disciplinary Background on Peer Reviewers’ Evaluations of Engineering Education Journal Manuscripts
  Kelsey Watts
  Gary Lichtenstein (Founder & Principal, Quality Evaluation Designs)
  Karin Jensen (Prof.)
  Evan Ko (University of Illinois at Urbana - Champaign)
  Rebecca A Bates (Professor & Chair)
  Lisa Benson (Professor)

Solar PV Installation and Troubleshooting Course Development
  Mohsen Azizi (New Jersey Institute of Technology)
  Venancio L. Fuentes (Department Chairperson) (County College of Morris)

A Successful 2-week Innovation- and Student Success-Focused Bridge Program for First-Year Students
  Karl Schubert
  Xochitl Delgado Solorzano (Director of the Honors College Path Program) (University of Arkansas)
  Leslie Bartsch Massey (Instructor) (University of Arkansas)
  Carol Gattis
  Jennie S Popp
  Chunhua Cao (The University of Alabama)
  Thomas Carter (Assistant Dean of Engineering) (University of Arkansas)
  Divya Muralidhara (University of Arkansas)

CAREER: Exploring LGBTQ Student Trajectories and Belonging in STEM Through Social Network Analysis
  Bryce E. Hughes (Associate Professor)
  Sidrah M G Watson
  Leilani Contos
  Sarah Heller

Surfacing Deeply Held Beliefs about Gender-and Race-Based Minoritization in Engineering: Emerging Insights After Two Years Focused on Data Collection
  Dira Melissa Delpech (PhD Student) (The Ohio State University)
  Emily Dringenberg (Assistant Professor) (The Ohio State University)

Innovative Curriculum: Collaboration Between Technician Education and Workforce Development
  Christine Michelle Delahanty (Area Coordinator of Science and Engineering) (Bucks County Community College)
  Vladimir Genis (Department Head, Engineering Technology) (Drexel University)
  Susan Herring
Virtual REU Program: Engineering Education Research
Oenardi Lawanto (Professor) (Utah State University)
Wade H Goodridge
Assad Iqbal (Graduate Research Assistant)

Transitioning Sustainable Manufacturing Undergraduate Research Experiences from an In-Person to a Virtual Format
Jeremy Rickli
Yinlun Huang (Professor)

Assessment of a Hybrid Research Experience for Undergraduates Program During the COVID-19 Pandemic
Jeremy Straub (Dr.) (North Dakota State University)

The development of collegiate STEM self-efficacy: A longitudinal study of first-year students
Megan Mcspedon (Graduate Student) (Rice University)
Margaret Beier
Brittany Bradford (Rice University)

THREE MENTORING PROGRAMS IN MATHEMATICS AT THE UNIVERSITY OF TEXAS AT ARLINGTON AND THEIR LOCAL AND BROADER IMPACTS
Tuncay Aktosun
Yolanda Parker
Jianzhong Su (Professor and Chair) (The University of Texas at Arlington)

CAREER: Characterizing Undergraduate Engineering Students’ Experiences with Mental Health in Engineering Culture
Karin Jensen (Prof.)
Eileen Johnson (Research Associate) (University of Illinois at Urbana - Champaign)
Joseph Francis Mirabelli (Graduate Assistant) (University of Illinois at Urbana - Champaign)
Sara Rose Vohra

Building engineering interest and resilience through maker programming in autism-inclusion schools
Ariana Riccio
Wendy B Martin (Senior Research Scientist)

Making to the Future: An Innovative Approach to Undergraduate Science Education
S. Catherine Silver Key (Associate Professor)
Aileen Reid (University of North Carolina, Greensboro)
Eric Saliim (North Carolina Central University)
Tanina Bradley

Backtracking CTE Pathways: Identifying and Investigating Pathways and Critical Junctures in Two-Year Information Technology Programs
Marcia A. Mardis (Dr.) (Florida A&M University - Florida State University)
Faye R Jones (Dr.) (Florida A&M University - Florida State University)

Engineering Faculty Members’ Experience of Professional Shame: Summary of Insights from Year 1
Amy L Brooks
James L. Huff (Associate Professor) (Harding University)

US Engineering Employment During the COVID-19 Pandemic
Holden Diethorn
James Creese Davis (Economist)
Gerald Roger Marschke (Associate Professor) (University at Albany-SUNY)
Andrew Wang

Linkage between Students’ Study Habits and their grades analyzed through Bayesian statistics
Muhammad Dawood (Dr.)
Malisa J. Guynn
Patti Wojahn (Professor) (New Mexico State University)

Increasing Global Competencies through International Interdisciplinary Undergraduate Research on Big Data in Energy and Related Infrastructure
Bimal P. Nepal (Professor) (Texas A&M University)
Eakalak Khan

Impact of Three Years of Intervention in Culturally Adaptive Pathway to Success on S-STEM Scholars
Eun-young Kang (Chair and Professor) (California State University, Los Angeles)
Matthew Jackson (Assistant Professor) (California State University, Los Angeles)

“Should we build this?”: Student reasoning in intentionally facilitated socio-technical design talks
Kristen B Wendell (Associate Professor of Mechanical Engineering) (Tufts University)
Jessica Watkins (Assistant Professor) (Vanderbilt University)
Natalie Annabelle De Lucca (Graduate Student Researcher) (Vanderbilt University)
Tyrine Jamella Pangan (STEM Education PhD Student)
Rae Woodcock
Chelsea Andrews

The Impact of S-STEM Faculty Mentoring on the Mentors
Donna C. Llewellyn (Executive Director)
Emily Knaphus-soran (Senior Research Scientist) (University of Washington)

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
Building a Community of Mentors in Engineering Education Research Through Peer Review Training
Karin Jensen (Prof.)
Evan Ko (University of Illinois at Urbana - Champaign)
Gary Lichtenstein (Founder & Principal, Quality Evaluation Designs)
Kelsey Watts
Rebecca A Bates (Professor & Chair)
Lisa Benson (Professor)

Equity in Engineering Education: The Experiences of Non-Traditional Students in Introductory Engineering Courses with Peer Learning Support
Kimberly A Luthi (Professor of Practice) (Embry-Riddle Aeronautical University - Worldwide)
Mohua Kar (DR)

Research Experiences for Teachers in Simulation and Visualization for Innovative Industrial Solutions
John Moreland
Tyamo Okosun (Purdue University Northwest)
Armin Silaen (Associate Research Professor)
Kyle Alexander Toth (Associate Research Engineer) (Purdue University Northwest)

Redefining and Reconceptualizing Disability Identity in Civil Engineering
Cassandra J McCall (Dr.)
Ashley Shew
Marie C. Paretti (Professor)
Denise Rutledge Simmons (Associate Professor) (University of Florida)
Lisa D. Mcnair (Professor)

Lessons Learned from Year 1 of NSF Research Experience for Teachers Site at North Dakota State University
Beena Ajmera
Sarah L Crary (North Dakota State University)
Christi Mcgeorge (North Dakota State University)

Increasing the Success Rates of Engineering Students After Transferring into Four Year Colleges from Community Colleges: It’s Much More Than Dollars
Ignatius Fomunung (Professor) (University of Tennessee at Chattanooga)
Marcy Porter (Program Accreditation & Assessment Manager) (University of Tennessee at Chattanooga)
Christopher Frank Silver (Assistant Professor) (University of Tennessee at Chattanooga)

STEM Identity Development for Under-represented Students in a Research Experience for Undergraduates
Gillian Roehrig (Professor)
Ngawang Gonsar
Alison Haugh Nowariak (Graduate Student STEM Education Researcher)

A Study of Variations in Motivation Related to Computational Modeling in First-year Engineering Students
Alison K Polasik (Associate Professor of Engineering) (Campbell University)

NSF RIEF: Influence of Self-Efficacy and Social Support on Persistence and Achievement in Chemical Engineering Sophomores: Measuring the Impact of an Intervention
Brad Cicciarelli
Timothy Reeves
Catherine Hendricks Belk (Clemson University)
Marisa K. Orr (Associate Professor)

Virtualizing Hands-On Mechanical Engineering Laboratories - A Paradox or Oxymoron
Kimberly Cook-chennault (Associate Professor) (Rutgers, The State University of New Jersey)

Micro Nano Technology Education Center
Jared Ashcroft (Professor) (Pasadena City College)
Billie Copley (Micro Nano Technology Education Center)
Peter D Kazarinoff (Managing Director) (Portland Community College)
Neda Habibi (University of North Texas)
Mel Cossette (Edmonds College)

Scaffolding Spatial Abilities in Integral Calculus
Eric Davishahl (Professor and Program Coordinator) (Whatcom Community College)
Lee Singleton (Professor)
Todd Haskell
Kathryn Mary Rupe (Assistant Professor of Math Education) (Western Washington University)
Leslie Glen

Assessing Awareness and Competency of Engineering Freshmen on Ethical and Responsible Research and Practices
Bimal P. Nepal (Professor) (Texas A&M University)
Michael Johnson (Professor)
Amaranth Banerjee (Associate Professor) (Texas A&M University)
Glen Miller

The Synergy of Intertwining Grant Activities: Cyber Up!
2022 ASEE ANNUAL CONFERENCE
WEDNESDAY, JUNE 29th SESSIONS

**GenCyber Girls**
Tobi West (Department Chair)

**Understanding Undergraduate Engineering Students’ Pandemic Experiences**
Michelle Maher (Professor) (University of Missouri - Kansas City)
Jacob Marszalek (University of Missouri - Kansas City)
Kathleen O&#39;shea

**Case study on engineering design intervention in physics laboratories**
Jason Morphew (Assistant Professor) (Purdue University at West Lafayette (PPI))
Kevin Jay Kaufman-Ortiz (Graduate Student)
N. Sanjay Rebello
Carina M Rebello (Assistant Professor of Practice) (Purdue University at West Lafayette (COE))

**Enhancing students’ outcomes in gatekeeper engineering courses through Technology-Assisted Supplemental Instruction (TASI)**
Jessica Ohanian Perez (Associate Director of Education and Inclusivity) (California State Polytechnic University, Pomona)
Faye Linda Wachs (Professor) (California State Polytechnic University, Pomona)
Brooke Jones
Deanna Miranda Barrios
Lily G. Gossage (Director, Maximizing Engineering Potential) (California State Polytechnic University, Pomona)

**Engineering Education Enrichment (e3) Initiative: A Co-Curricular Program Intended to Improve Persistence and Career Success for Low-Income and First-Generation Engineering Students**
Hannah Huvard
Hengameh Bayat
Sandra M. Way (Associate Professor) (New Mexico State University)
Catherine Brewer (Assistant Professor) (New Mexico State University)
Addison D. Miller (Research Assistant)
Antonio Garcia (Associate Dean of Engineering) (New Mexico State University)

**Nontraditional students in engineering: Studying student support and success experiences to improve persistence and retention**
Cory Brozina (Assistant Professor and Director of First Year Engineering)

**Breaking Boundaries: An Organized Revolution for the Professional Formation of Electrical Engineers**
Chris S Ferekides (Professor) (University of South Florida)
Carol Haden (Vice President) (Northern Arizona University)
Ismail Uysal (Assistant Professor) (University of South Florida)
Chung Seop Jeong (Instructor) (University of South Florida)
Arash Takshi
Kevin Yee

**Developing optical devices and projects for teaching engineering**
Nathan Lemke (Associate Professor)
John McCauley
Tristan E Noble
Grace Riermann
Ellesa St. George
Nathan Lindquist (Professor of Physics and Engineering)
Keith Robert Stein (Dr.) (Bethel University)
Karen Irene Rogers (Director of Engineering Programs)

**Mentoring to Build the NSF ATE Community**
Karen Wosczyna-birch (Director)

**Using Telehealth Technologies to Build Nurse Practitioner Student Confidence**
Dawn O. Eckhoff (University of Central Florida)
Michelle Taub (Assistant Professor) (University of Central Florida)
Hansen Mansy (University of Central Florida)
Damla Turgut (Professor) (University of Central Florida)
Sang-Eun Song (Associate Professor)

**Developing and Assessing Educational Games to Enhance Cyber Security Learning in Computer Science**
Jinghua Zhang (Professor)

**Same soup, different bowl: Understanding the mentoring attitudes of STEM doctoral faculty at HBCUs**
Lisa Merriweather (Dr)
Cathy Howell (Clinical Assistant Professor) (University of North Carolina at Charlotte)
Niesha C Douglas (Dr.)

**Examining Faculty and Graduate Student Attitudes on Stress and Mental Health**
David Feil-seifer
Mackenzie C. Parker (University of Nevada, Reno)
Adam Kirn (Associate Professor)

**Early Research Scholars Program at UIC Adjustments**
Renata Revelo

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Joseph Hummel

**S-STEM: Creating Retention and Engagement for Academically Talented Engineers - successes and challenges**

Indira Chatterjee (Associate Dean of Engineering) (University of Nevada, Reno)
Kelsey Scalaro (Graduate Student)
Ann-Marie Vollstedt (Teaching Assistant Professor) (University of Nevada, Reno)
Adam Kirn (Associate Professor)

**Research Experiences for Teachers Summer Program in Biologically-inspired Computing Systems**

Na Gong (Associate Professor) (University of South Alabama)
Shenghua Zha

**Building Capacity: Enhancing Undergraduate STEM Education by Improving Transfer Success**

Pamela Ann Brown
Melanie Villatoro (Associate professor)
Elizabeth Milonas
Hon Jie Teo (Associate Professor) (New York City College of Technology)
Diana Samaroo

**Using a Student Success Coach to Improve Success for Full and Part-Time Students in STEM**

Tom G Carter (Professor)
Richard H Jarman (College of Dupage)
Susan Fenwick
Marcia Frank (Grants Manager) (College of Dupage)
Cory Michael Dicarlo

**Infusing Data Science into the Undergraduate STEM Curriculum**

Petra Bonfert-Taylor
Laura E. Ray (Senior Associate Dean of Faculty)
Scott Pauls (Professor of Mathematics) (Dartmouth College)
Lorie Loeb (Professor) (Dartmouth College)
Logan Sankey (Dartmouth College)
James Busch (Ph.D. Candidate) (Dartmouth College)
Taylor Hickey (Dartmouth College)

**The concerns and perceived challenges that students faced when traditional in-person engineering courses suddenly transitioned to remote learning**

Sarah Lynn Orton (Dr.) (University of Missouri - Columbia)
Fan Yu (University of Missouri - Columbia)
Johanna Milord

Lisa Y Flores (Professor) (University of Missouri - Columbia)
Rose M Marra (Director) (University of Missouri - Columbia)

**Culturally Responsive Storytelling Across Content Areas Using American Indian Ledger Art and Physical Computing**

Joseph Eli Chipps (Postdoctoral Researcher)
Aayushi Dangol
Brittany Terese Fasy
Stacey Hancock
Mengying Jiang (Utah State University)
Aubrey Rogowski
Kristin A Searle (Assistant Professor) (Utah State University)
Colby Tofel-Grehl (Utah State University)

**Teaming Engineering Students with Medical Students - Interdisciplinary Learning for Biomedical Innovation**

George Tan (Assistant Professor) (Texas Tech University)
Luke LeFebvre
Tim Dallas (Professor) (Texas Tech University)
Changxue Xu (Texas Tech University)
Jnev Biros (Dr)

**Voices of experience: Enhancing learning on resilient infrastructure and sustainability through serviness**

Ruben Esteban Leoncio Caban (University of Puerto Rico, Mayaguez Campus)
Rocio Juliana Sotomayor-irizarry (Student) (University of Puerto Rico, Mayaguez Campus)
Elmer Miguel Irizarry Rosario (University of Puerto Rico, Mayaguez Campus)
Humberto Eduardo Cavallin (University of Puerto Rico, Rio Piedras)
Carla Lopez Del Puerto (Professor)
Luisa Guillemand (Dr.) (University of Puerto Rico, Mayaguez Campus)

**Encouraging Underrepresented and Entrepreneurial-Minded Postdocs in High-Tech Startups**

Rachel Leavitin (Program Manager - NDSEG) (American Society for Engineering Education)
Teddy Ivanitzki (FRO Director) (American Society for Engineering Education)
Rashida Johnson (American Society for Engineering Education)

**Applying an Entrepreneurial Mindset to Course-based Undergraduate Research Experiences in STEM**

David G Alexander (Associate Professor)
Michael Kotar (Professor of Education, Emeritus) (California State University, Chico)
Supporting Convergence Development through Structural Changes to an ECE Program
JoAna Brooks (California State University, Chico)
Alan Cheville (Professor)
Sarah Appelhans (Postdoctoral Research Assistant) (Bucknell University)
Rebecca Thomas (Adjunct Professor) (Bucknell University)
Stewart Thomas (Assistant Professor) (Bucknell University)
Robert M Nickel
Stu Thompson (Associate Professor and Department Chair) (Bucknell University)

Reducing Gender-Based Harassment in Engineering: Opportunities and Obstacles to Bystander Intervention
Mala Htun (Professor)
Amir Hedayati Mehdiabadi (Assistant Professor)
Elizabeth Moschella-Smith (Research Scientist) (University of New Hampshire)

Insights from the First Year of Project # 204472 “Improving the Conceptual Mastery of Engineering Students in High Enrollment Engineering Courses through Oral Exams”
Huihui Qi
Marko Lubarda (Assistant Teaching Professor) (University of California, San Diego)
Curt Schurgers (Teaching Professor) (University of California, San Diego)
Carolyn L Sandoval (Associate Director) (University of California, San Diego)
Maziar Ghazinejad (Assistant Teaching Professor) (University of California, San Diego)
Josephine Relaford-Doyle (University of California, San Diego)
Minju Kim (PhD Candidate)
Mia Minnes (Associate Teaching Professor) (University of California, San Diego)
Saharnaz Baghdadechi (Teaching Professor)
Alex M Phan (University of California, San Diego)
Celeste Pilegard (University of California, San Diego)
Nathan Delson (Professor)

Using Blended Modalities for Engineering Education Professional Development: Supporting Elementary Teachers’ Development of Community-Focused Engineering Curricula
Rebekah J Hammack (Assistant Professor)
Nick Lux (Associate Professor)
Blake Wiehe (Montana State University - Bozeman)
Miracle Moonga
Brock J. Lameres (Director, Montana Engineering Education Research Center (MEERC)) (Montana State University - Bozeman)

Professional Socialization to Enhance Research and Faculty Readiness
Jeremy V Ernst (Professor) (Embry-Riddle Aeronautical University - Worldwide)
Brenda R. Brand (Professor) (Virginia Polytechnic Institute and State University)
Xiao Zhu (Virginia Polytechnic Institute and State University)

Development of an Electronics Manufacturing Technician Program for Community College Students
Nicholas Langhoff (Professor - Engineering / Engineering Technology)
Julie A. Shattuck

“Everything sucked . . . for everyone”: Narrative of a Student Journeying Through Engineering Before COVID-19, During COVID-19, and Beyond
Herman Clements
Brianna Benedict McIntyre (Graduate Research Assistant)
Jacqueline Rohde (Purdue University at West Lafayette (COE))
Heather Perkins
Andrea Lidia Castillo (University of California, Irvine)
Joana Marques Melo (Doctor) (Purdue University at West Lafayette (COE))
Allison Godwin (Associate Professor)

Making Engineering Real: Elementary Teachers’ Virtual Engineering Instruction
Jennifer L Maeng
Amanda Gonczi (Dr.)
Robert Handler
Whitney Nicole McCoy
Hamid Nadir

Jane L. Lehr (Professor)
Dominic J Dal Bello (Professor)
Fred W Depiero (Professor)
John Y Oliver (Professor) (California Polytechnic State University, San Luis Obispo)
Victoria Siaumau

Leadership Development and STEM Student Success Using the Social Interdependence Model
Bruce DeRuntz (Director of Leadership Development)
Tom Withee

Supporting Engineering Graduate Students in Professional Identity Cultivation through Disciplinary Stewardship
Megan Frary (Associate Professor) (Boise State University)
Donna C. Llewellyn (Executive Director)
Paul Simmonds (Boise State University)
Julianne A. Wenner (Associate Professor) (Clemson University)

Perceptions of Engineering Learning Software in Classrooms with Diverse Student Populations Using an Expanded Technology Acceptance Model
Kimberly Cook-chennault (Associate Professor) (Rutgers, The State University of New Jersey)
Idalis Villanueva (Associate Professor)

Virtual Communities of Practice: Social Capital’s Influence on Faculty Development
Chiebuka Egwuonwu (The Ohio State University)
Isabel Miller
Karin Jensen (Prof.)
Julie Martin

Engaging Children in Cryptology and Cybersecurity Learning and Career Awareness
Pavlo Antonenko
Zhen Xu
Do Hyong Koh
Christine Wusylko (University of Florida)
Kara Dawson
Swarup Bhunia

Development of Social Engagement Activities to Increase Student Participation in a Makerspace
Jill Davishahl (Assistant Professor and First Year Programs Director) (Western Washington University)
Audrey Boklage (Dr.) (University of Texas at Austin)
Madison E. Andrews (University of Texas at Austin)

An Integrated Program for Recruitment, Retention, and Graduation of Academically Talented Low-Income Engineering Students: Lessons Learned and Progress Report
Rezvan Nazempour (Graduate Research Assistant) (The University of Illinois at Chicago)

Houshang Darabi (Professor)
Betul Bilgin (Clinical Associate Professor)
Anthony Felder (Clinical Assistant Professor) (The University of Illinois at Chicago)
Shanon Marie Reckinger (Clinical Assistant Professor) (The University of Illinois at Chicago)
Renata Revelo
Peter C Nelson (Professor &amp; Dean) (The University of Illinois at Chicago)
Jeremiah Abiade
Didem Ozevin (Dr.) (The University of Illinois at Chicago)

Sustainable bridges from campus to campus: Summer bridge program implementation across four campuses
Catherine L. Cohan (Assistant Research Professor)
Lauren A Griggs (Director, Multicultural Engineering Program, Assistant Teaching Faculty)
Ryan Scott Hassler
Mark William Johnson (Pennsylvania State University, Altoona Campus)
Mikhail Kagan (Dr.) (Pennsylvania State University, Ogontz Campus)
Amy L. Freeman (Director, Millennium Scholars Program) (Pennsylvania State University)
Tonya Peeples

Engaging undergraduate researchers: Contextualizing beliefs and identities about smartness in engineering
Amy Kramer (The Ohio State University)
Yiqing Li (The Ohio State University)
Rachel Louis Kajfez (Assistant Professor)
Emily Dringenberg (Assistant Professor) (The Ohio State University)

Current Status of the Affirmative Sustainable Support for Scholars in Energy Technologies (ASSSET) and its Impact of Engineering Education
Farzad Ferdowsi (University of Louisiana at Lafayette)
Afef Fekih (University of Louisiana at Lafayette)
Heather N. Stone (Assistant Professor)
G. H. Massiha (Dr.) (University of Louisiana at Lafayette)

Examining STEM Learning Motivation Challenges in Undergraduate Students During the COVID-19 Pandemic
Andrea Nana Ofori-boadu (Dr.)
Rabiatu Bonku
Alesia Ferguson
Mercy Folashade Fash
Jennifer Richmond-Bryant (Associate Professor of the Practice) (North Carolina State University at Raleigh)
Impacts of a Sustainability-Focused REU Site on Student Products and Career Trajectory for Underrepresented Groups in Engineering

Christine Wittich
Shannon Bartelt-hunt (Professor) (University of Nebraska - Lincoln)

Integrated Engineering and Empathy Activities in Pre-K and Kindergarten

Melissa Higgins (Vice President of Programs and Exhibits) (Boston Children’s Museum)
Michelle Cerrone

International Research Experience for Native American Students in IoT-Enabled Environmental Monitoring Technologies

Jinhui Wang (University of South Alabama)
Jill M. D. Motschenbacher (Associate Director, Office of Teaching & Learning // Assistant Professor of Practice, Soil Science) (North Dakota State University)
Amber D Finley

The Consequential Agency of Faculty Seeking to Make Departmental Change

Vanessa Svihla
Nadia N. Kellam (Associate Professor)
Susannah C. Davis (Research Assistant Professor) (University of New Mexico)

Computational Thinking in the Formation of Engineers: Year 2

Noemi V Mendoza Diaz (Assistant Professor) (Texas A&amp;M University)
Russell D. Meier (Professor)
Deborah Anne Trytten (Professor)

Challenges of Remote Learning and Mentoring among Engineering Students and Faculty during the COVID-19 Pandemic

Chi-ning Chang (Assistant Research Professor)
Guan K. Saw
Laura J Malagon-Palacios

Course-based Adaptations of an Ecological Belonging Intervention to Transform Engineering Representation at Scale

Linda DeAngelo (Associate Professor of Higher Education) (University of Pittsburgh)
Allison Godwin (Associate Professor)
kevin r binning (associate professor)
Natascha Trellinger Buswell (Assistant Professor of Teaching)
Jennifer Dawn Cribbs (Assistant Professor) (Oklahoma State University)

Erica McGreevy (Lecturer II) (University of Pittsburgh)
Christian D Schunn (Senior Scientist) (University of Pittsburgh)
Anne-Ketura Elie (University of Pittsburgh)
Kevin Jay Kaufman-Ortiz (Graduate Student)
Beverly Conrique (University of Pittsburgh)
Carlie Laton Cooper (University of Georgia)
Danielle V. Lewis
Jacqueline Rohde (Purdue University at West Lafayette (COE))

Update on is it Rocket Science or Brain Science? Developing an Approach to Measure Engineering Intuition

Kaela M Martin
Sanjeev M Kavale (Arizona State University)
Adam R Carberry (Associate Professor)
Elif Miskioglu (Assistant Professor)
Caroline Bolton (Bucknell University)
Madeline Roth (Bucknell University)

The neurocognition of engineering students designing: A preliminary study exploring problem framing and the use of concept mapping

Tripp Shealy (Associate Professor) (Virginia Polytechnic Institute and State University)
John S Gero (Dr) (University of North Carolina at Charlotte)
Paulo Ignacio Jr. (Virginia Polytechnic Institute and State University)

Expanding Access to and Participation in MIDFIELD (Year 6)

Susan M Lord (Professor & Chair)
Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education)
Marisa K. Orr (Associate Professor)
Joe Roy (Director of Institutional Research and Analytics)
Catherine E. Brawner (President)
Richard A. Layton (Dr)
Russell Andrew Long (Managing Director MIDFIELD & Director of Project Assessment (Retired)) (Purdue Engineering Education)
Hayaam Osman (Purdue University at West Lafayette (PPI))

Long-Term Impact of Humanitarian Engineering Projects on Views of Diversity, Equity, and Inclusion: Preliminary Qualitative Results from Alumni

Kirsten Heikkinen Dodson (Associate Professor and Chair Mechanical Engineering)
Hannah Grace Duke (Undergraduate Researcher) (Lipscomb University)
Justice Breana White (Lipscomb University)
Elizabeth Buchanan
Engaging Female High School Students in the Frontiers of Computing
Gordon Stein (Vanderbilt University)
Isabella Gransbury (North Carolina State University at Raleigh)
Devin Jean (Vanderbilt University)
Lauren Alvarez (North Carolina State University at Raleigh)
Marnie Computer Hill (North Carolina State University at Raleigh)
Veronica M Catete
Shuchi Grover
Tiffany Barnes (Distinguished Professor) (North Carolina State University at Raleigh)
Brian Broll (Research Scientist) (Vanderbilt University)
Akos Ledeczi (Vanderbilt University)

Problem Based Learning as a Framework for a Research Experience for Teachers
Stephanie Philipp (Assistant Professor)

More Than Just Nice to Have: Engineering Managers’ Perceptions about the Role of Adaptability in Hiring and Promotion Decisions
Samantha Ruth Brunhaver (Assistant Professor)
Susan Sajadi (PhD Student)
Talia Makarov (Clemson University)

Sketchtivity, an Intelligent Tutoring Software: Broadening Applications and Impact
Morgan Weaver (Graduate Research Assistant) (Georgia Institute of Technology)
Hillary Merzdorf
Donna Jaison
Vimal Kumar Viswanathan (Associate Professor) (San Jose State University)
Kerrie A Douglas (Assistant Professor of Engineering Education)
Tracy Anne Hammond (Professor)
Julie S Linsey (Professor)

Responsible Engineering Across Cultures: Investigating the Effects of Culture and Education on Ethical Reasoning and Dispositions of Engineering Students
Scott Streiner (Visiting Assistant Professor, Industrial Engineering Department)
Qin Zhu (Assistant Professor) (Colorado School of Mines)
Rockwell Clancy
Ryan Thorpe (Associate Professor)

The WRIT2TES Project: Writing Research Initiating Identity Transformation in Engineering Students
Royce Francis (Associate Professor)
Marie C. Paretti (Professor)
Rachel Claire Riedner (Professor)

Lightweight, Scalable, and Relational Learning Experiences as an Approach to Overcoming System-Level Challenges in Education
David Lee (University of California, Santa Cruz)

CAREER: Broadening Participation in STEM: A Qualitative Analysis of Resilience Experiences and Strategies of Latina STEM Majors in Hispanic Serving Institutions
Elsa Gonzalez (Associate Professor) (University of Houston)
Emma Perez

Supporting an Alternate PhD Pathway in STEM: Findings from a Qualitative Study of Students and Faculty
Audrey Rorrer
David K Pugalee (Dr.) (University of North Carolina at Charlotte)
Kamalapriya Srinivasan

Evaluating the Impact of Enrichment and Professional Development Activities on REU Students
Bimal P. Nepal (Professor) (Texas A&M University)
Manan Shah (Texas A&M University)

Developing Professional Identity: Integrating Academic and Workplace Competencies within Engineering Programs
Betul Bilgin (Clinical Associate Professor)
James W Pellegrino (Professor) (The University of Illinois at Chicago)
Cody Wade Mischel (The University of Illinois at Chicago)
Lewis E Wedgewood (The University of Illinois at Chicago)

Advances in Step-Based Tutoring for Linear Circuit Analysis and Comprehensive Evaluation
Brian J Skromme (Professor) (Arizona State University)
Rishabh Gupta (Arizona State University)
Tariq M Nasim (Arizona State University)
Caleb Redshaw
Benjamin Daniel Miller (Arizona State University)
Petru Andrei (Florida A&M University - Florida State University)
Hector Erives (Associate Professor of Practice) (University of Texas at El Paso)
Deanna Bailey (Dr.) (Morgan State University)
Gregory M. Wilkins (Professor of Practice) (Morgan State University)
Srividya Kona Bansal (Dr.) (Arizona State University)
Megan O’donnell (Research Professional) (Arizona State University)
Development of an Alternate Pathway into STEM: A Progress Report
Denise Hum (Professor)

Discrimination & Identity: How Engineering Graduate Students Navigate Pathways to Persistence
Elan C Hope (North Carolina State University at Raleigh)
Adam Kirn (Associate Professor)
Matthew Bahnson
Derrick James Satterfield (Doctoral Candidate) (University of Nevada, Reno)
Anitra Rochelle Alexander
Alexis Briggs
Laila Allam (North Carolina State University at Raleigh)

Changing the Paradigm: Developing a Framework for Secondary Analysis of EER Qualitative Datasets
Holly M Matusovich (Associate Professor) (Virginia Polytechnic Institute and State University)
Jennifer M Case (Chair, Engineering Education) (Virginia Polytechnic Institute and State University)
Marie C. Paretti (Professor)
Joachim Walther (Professor) (University of Georgia)

Effects of High Impact Educational Practices on Engineering and Computer Science Student Participation, Persistence, and Success at Land Grant Universities – Year 2
Muhammad Asghar (Graduate Research Assistant)
Angela Minichielo (Assistant Professor)
Candis S Claiborn (Professor and Dean Emeritus) (Washington State University)
Anika Banerjee
Olusola Adesope (Professor)

Workshop Result: Feedback from the 2021 Engineering Research Center Planning Grant Workshop
Sarah Yang (National Science Foundation)
Erin Steigerwalt (American Society for Engineering Education)
Gary Lichtenstein (Founder & Principal, Quality Evaluation Designs)
Kelsey Watts

Exploring the complex relationship between engineering students’ math experiences and identity formation.
Jill Davishahl (Assistant Professor and First Year Programs Director) (Western Washington University)
Joseph Arthur Brobst (Research Assistant Professor)
Elizabeth Litzler (Director) (University of Washington)
Sura Alqudah (Assistant Professor) (Western Washington University)
Andrew G Klein (Professor) (Western Washington University)

CAREER: Disrupting the Status Quo Regarding Who Gets to be an Engineer -- Insights from Year 1
Jeremi S London (Associate Professor)
Brianna Benedict McIntyre (Graduate Research Assistant)
Nicole Adia Jefferson (Student) (Virginia Polytechnic Institute and State University)

Enabling Resilient Educational Support Network during COVID-19 Pandemic for Undergraduate and Second Career Seeking Students
Oleksandr Kravchenko (Assistant Professor)

Creating Employer-Driven Information Technology Skill Standards, the Process, and the Results
Ann Beheler (Center for Occupational Research and Development)

Building Undergraduate Research in a Fully Online Engineering Program
Robert Deters (Associate Professor) (Embry-Riddle Aeronautical University - Daytona Beach)
Brent Terwilliger (Associate Professor) (Embry-Riddle Aeronautical University - Worldwide)
Emily K Faulconer (Associate Professor) (Embry-Riddle Aeronautical University - Worldwide)
Kelly A George (Professor) (Embry-Riddle Aeronautical University - Worldwide)

Aviation Maintenance Technology Schools Response to the COVID-19 Pandemic
Katie Shakour
Tim Ransom (Graduate Student) (Clemson University)
Eliza Gallagher (Dr.)
Rebecca S Short (Director of Operations CUCWD) (Clemson University)
Karen Jo Johnson (Southern Illinois University Carbondale)
Gayatri Anoop (Clemson University)
Kapil Chalil Madathil (Tiencken Endowed Associate Professor) (Clemson University)

Facilitating Conditions for Engineering Faculty Technology Adoption
Michelle Jarvie-eggart
Alfred Lawrence Owusu-Ansah (Michigan Technological University)
Shari Stockero
Computational Bioengineering Summer Research Experience for Undergraduates: Launching an REU Program during a Pandemic
Edward Sander (Associate Professor) (The University of Iowa)
Joshua Lobb (Assistant Director of Graduate Programs) (The University of Iowa)
James A Ankrum (Associate Professor) (The University of Iowa)
Nicholas A Bowman
Solomon Fenton-Miller (The University of Iowa)

Exploring children’s goal orientation in engineering design activities
Changchia James Liu (Senior Research Associate) (New York Hall of Science)

Work in Progress: Development of UAS Module in Laboratory Class for a Senior Engineering Core Course
Md Tanvir Ahad
Wei Sun
Jiaze Gao (University of Oklahoma)
Zahed Siddique (Professor) (University of Oklahoma)

Zip to Industry: A First-Year Corporate-STEM Connection Program
Donald P. Visco (Professor of Chemical and Biomolecular Engineering)
Nidaa Makki
Joshua Eugene Phillips (The University of Akron)
Elle Bonnema
Deanna R. Dunn (Director) (The University of Akron)
Laura L Carey (Director, Career Services) (The University of Akron)

Building a Sustainable University-Wide Interdisciplinary Graduate Program to Address Disasters
Marie C. Paretti (Professor)
Jessica Deters
Margaret Webb (PhD student) (Virginia Tech Department of Engineering Education)
Maya Menon

S-STEM Summer, Sophomore Bridge: Successes of Two Cohorts and Experiences of our Year 5 Cohort
Katie Evans (Dean) (Houston Baptist University)
Marisa K. Orr (Associate Professor)
Mitzi Desselles (Associate Professor) (Louisiana Tech University)

Developing an Interview Protocol to Elicit Engineering Students’ Divergent Thinking Experiences
Shannon M Clancy (PhD Candidate)

Laura Murphy
Shanna R. Daly (Associate Professor) (University of Michigan)
Colleen M. Seifert (Professor) (University of Michigan)

RFE: Understanding graduate engineering student well-being for prediction of retention: Year 1
Jennifer Cromley
Joseph Francis Mirabelli (Graduate Assistant) (University of Illinois at Urbana - Champaign)
Karin Jensen (Prof.)

Bridging the Gender and Skills Gaps with Emerging Technologies
Elodie Billionniere
Farzana Rahman (Syracuse University)

Development of Educational Modules to Assess Flood Risk and Mitigation Strategies for Coastal Communities
Carla Lopez Del Puerto (Professor)
Humberto Eduardo Cavallin (University of Puerto Rico, Rio Piedras)
Rey D. Montalvo (Student) (University of Puerto Rico, Mayaguez Campus)

Assessing Educational Pathways for Manufacturing in Rural Communities: Research Findings and Implications from an Investigation of New and Existing Programs in Northwest Florida
Marcia A. Mardis (Dr.) (Florida A&M University - Florida State University)
Faye R Jones (Dr.) (Florida A&M University - Florida State University)

Building Effective Community College Engineering and Information Technology Internships
Lois Joy (Research Director)
Nia Yisrael

Assessing Socially Engaged Engineering Training on Students’ Problem Solving: The Development of a Scenario-based Assessment Approach
Elizabeth Rose Pollack (PhD Student)
Erika Mosyjowski (Research Fellow)
Kelley E Dugan
Shanna R. Daly (Associate Professor) (University of Michigan)
Colleen M. Seifert (Professor) (University of Michigan)

Impact of Peer-Assisted Learning and Leadership Development on Undergraduate Students
Julie Fogarty (Assistant Professor) (California State University, Sacramento)
Robin Altman
Jennifer Lundmark

Reimagining Energy Year 4: Lessons Learned
Gordon D Hoople (Assistant Professor) (University of San Diego)
Diana Chen (Assistant Professor of Engineering) (University of San Diego)
Susan M Lord (Professor & Chair)
Joel Alejandro Mejia (Dr.)

Tracking SUCCESS in Mechanical Engineering Students: Update on a Longitudinal Study of the Role of Non-Cognitive and Affective (NCA) Factors
James M Widmann (Department Chair)
John Chen
Jocelyn Paula Gee
Brian P. Self (Professor)

Building Bridges into Engineering and Computer Science: Outcomes, Impacts and Lessons Learned
Doris J. Espiritu (Dr)
Ruzica Todorovic

Rewards and Challenges in adopting agility in an academic department
Massood Towhidnejad (Director of NEAR Lab) (Embry-Riddle Aeronautical University - Daytona Beach)
Omar Ochoa (Assistant Professor) (Embry-Riddle Aeronautical University - Daytona Beach)
James Pembridge
Radu F. Babiceanu (Professor) (Embry-Riddle Aeronautical University - Daytona Beach)
Erin Elizabeth Chernak (A. Dale Thompson Endowed Professor of Leadership) (The University of Texas at Arlington)

Do Metacognitive Instruction and Repeated Reflection Improve Outcomes?
Renee M Clark (Director of Assessment) (University of Pittsburgh)
Autar Kaw (Professor)
Rasim Guldiken (Faculty Member) (University of South Florida)

Connecting Research to the Broader Community: Developing and Implementing a Graduate Course Across an Engineering Research Center's Partner Universities
Jean S Larson (Education Director)
Claudia Elena Zapata
Edward Kavazanjian (Professor)

Recruiting and Retaining Low-Income Engineering Students Across Four Institutions During a Pandemic: Progress and Lessons Learned from a Track 3 S-STEM Grant
Ricky T Castles (Associate Professor)
Chris Venters
Charles Edward Goodman

Developing Deliberate Practice for Learning Engineering Dynamics by Analyzing Students’ Mental Models
Yan Tang (Dr.)
Haiyan Bai (Professor) (University of Central Florida)
Richard Catrambone (Professor) (Georgia Institute of Technology)

Preparing Rural Middle School Teachers to Implement an Engineering Design Elective Course: A Just-In-Time Professional Development Approach
Tameshia Ballard Baldwin (Teaching Assistant Professor) (North Carolina State University at Raleigh)
Callie Womble Edwards (North Carolina State University at Raleigh)

Underrepresented Minority Women's Experiences in a Virtual eSTEM Peer Mentoring Program
Vivian Jones
Jilllan L Wendt (Associate Professor of Science Education)

Understanding the Values of, and Institutional Barriers Toward, Transforming Undergraduate Learning in the Pursuit of Innovation
Greg J Strimel (Assistant Professor, Engineering/Technology Teacher Education) (Purdue University at West Lafayette (PPI))
Sherylyn Briller (Professor)
Douglas Edward Pruim
Todd Kelley (Associate Professor) (Purdue University at West Lafayette (COE))
Jung Joo Sohn (Purdue University at West Lafayette (COE))
Rebecca Martinez (Purdue Polytechnic Graduate Programs)

Examining Women STEM Faculty’s Participation in Entrepreneurship Programming
Prateek Shekhar (Assistant Professor)
Jacqueline Handley
Aida Lopez Ruiz (New Jersey Institute of Technology)
Aileen Huang-saad (Associate Professor)

Exploring Nudging Approaches for Growing a Culture of Diversity and Inclusion with Engineering Faculty
Arianne X Collop (University of Colorado Denver)
Heather Lynn Johnson
Katherine Goodman (Assistant Professor)
Tom Altman
Maryam Darbeheshti (Faculty) (University of Colorado Denver)
Kristin L Wood (Associate Dean, Exec. Dir. of CMTC &}

Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.
Professor) (University of Colorado Denver)
David C. Mays (Professor)

Engaging Women in Engineering- Training Mentors to Make a Difference (iTEST 1849735): Transforming Curriculum and Mentor Training in a Highly Successful Natural Science Program
Jacqueline Genovesi (Executive Director Center for STEAM Equity) (Drexel University)
Kimberly Sterin (Drexel University)

Youth Engineering Solutions (YES) Out of School: Engineering Opportunities in Out-of-School Programs for English Learners
Christine M Cunningham (Professor Education and Engineering)
Gregory John Kelly (Dr.) (Pennsylvania State University)

CAREER: ‘Support our Troops’: Re-storying Student Veteran and Service Member Deficit in Engineering through Professional Formation and Community Advocacy: YEAR 1
Angela Minichiello (Assistant Professor)
Hannah Wilkinson

First-generation student success and the SD-FIRST program
Cassandra Birrenkott
Alycia A Jensen (South Dakota School of Mines and Technology)
Jon J Kellar (Professor) (South Dakota School of Mines and Technology)
Michael West (Assoc. Professor & Chair) (South Dakota School of Mines and Technology)
Lisa Carlson (Director, Women in Science and Engineering) (South Dakota School of Mines and Technology)
Jesse Herrera (Director of Inclusion) (South Dakota School of Mines and Technology)
Molly E Moore (Associate Vice President for Enrollment Management) (South Dakota School of Mines and Technology)

The Cumulative Effects of an NSF-Funded Additive Manufacturing Course at Three Large State Universities and Their Surrounding Communities
Patricia Ann Maloney (Dr.) (Texas Tech University)

Mentoring Low-SES Students and Developing Professional Support Networks
Robert Merton Stwalley (Dr.) (Purdue University at West Lafayette (COE))

Collaborative Research: Design and Development: Lessons from Conducting the Skillful Learning Institute
Patrick Cunningham (Professor)
Holly M Matusovich (Associate Professor) (Virginia Polytechnic Institute and State University)
Rachel McEord Ellestad (Senior Lecturer and Research Assistant
Professor) (University of Tennessee at Knoxville)
Cheryl Carrico (Owner, E4S, LLC)
Carol Geary

Developing a Culture of Strategic Employer Engagement and Grant Know-How to Support Innovative Technical Programs
Ann Beheler (Center for Occupational Research and Development)
Hope Cotner (Center for Occupational Research and Development)

Developing and Sustaining Inclusive Engineering Learning Communities and Classrooms
Jessica Moriah Vaden (Graduate Student)
Melissa M. Bilec (Associate Professor) (University of Pittsburgh)
April Dukes

Growing Entrepreneurially Minded Undergraduate Researchers with New Product Development in Applied Energy
Bhavana Kotla (PhD Candidate)
Lisa Bosman (Faculty)
Jason Ostanek (Purdue University at West Lafayette (PPI))
Jose Garcia
Sunghawk Lee (Assistant Professor) (Purdue University at West Lafayette (PPI))

S-STEM First Year Progress: Baylor Engineering and Computer Science Scholar’s Program
Michael W. Thompson (Professor and Associate Dean for Undergraduate Programs) (Baylor University)
Anne Marie Spence (Clinical Professor) (Baylor University)
Carolyn Skurla (Associate Professor) (Baylor University)
Emily Sandvall (Director of Undergraduate Programs) (Baylor University)
Andrea Pouso Morales (Graduate Apprentice) (Baylor University)

National Science Foundation ATE Grant Funding and Mentoring Opportunities
Greg Kepner (Principal Investigator) (Hillsborough Community College)

Description, assessment, and outcomes of three National Science Foundation Research Traineeship (NRT) components: transferable skills course, interdisciplinary research proposal and project, and multidisciplinary symposium
Eduardo Santillan-jimenez (University of Kentucky)
Carissa B. Schutzman (Senior Research Associate) (University of Cincinnati)
260 Schedule subject to change. Please go to https://2022-asee.slayte.com/ for up-to-date information.

Keren Mabisi

**Changing Homework Achievement with Mechanix Pedagogy: A Recap**

Matthew Runyon (Texas A&M University)
Kimberly Grau Talley (Associate Professor)
Vimal Kumar Viswanathan (Associate Professor) (San Jose State University)
Kristi Shryock
Benjamin Caldwell (Associate Provost) (LeTourneau University)
Julie S Linsey (Professor)
Tracy Anne Hammond (Professor)

Matthew Runyon (Texas A&M University)
Kimberly Grau Talley (Associate Professor)
Vimal Kumar Viswanathan (Associate Professor) (San Jose State University)
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Vimal Kumar Viswanathan (Associate Professor) (San Jose State University)
Kristi Shryock
Benjamin Caldwell (Associate Provost) (LeTourneau University)
Julie S Linsey (Professor)
Tracy Anne Hammond (Professor)

**Three Years of the Urban STEM Collaboratory**

Maryam Darbehesht (Faculty) (University of Colorado Denver)
Miriam Howland Cummings (Graduate Research Assistant)
Stephanie S Ivey (Associate Dean for Research) (The University of Memphis)
David J. Russomanno (Dean) (Indiana University - Purdue University Indianapolis)
Michael S. Jacobson
Tom Altman
Katherine Goodman (Assistant Professor)
Karen D Alfrey (Associate Dean of Undergraduate Academic Affairs and Programs) (Indiana University - Purdue University Indianapolis)
Craig O. Stewart
Jeffrey Watt

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Tom Altman
Katherine Goodman (Assistant Professor)
Karen D Alfrey (Associate Dean of Undergraduate Academic Affairs and Programs) (Indiana University - Purdue University Indianapolis)
Craig O. Stewart
Jeffrey Watt

**Enhancing Students’ Engineering Self-Efficacy, Values, and Identity through Needs Finding and Engineering Design**

Tobin N. Walton (Dr.) (North Carolina Agricultural and Technical State University (CoE))
Jared Webb (Dr.) (North Carolina Agricultural and Technical State University (CoE))
Stephen B. Knisley (Professor & Chair) (North Carolina Agricultural and Technical State University (CoE))
Arvind Chandrasekaran
Simrit Safarulla

Tobin N. Walton (Dr.) (North Carolina Agricultural and Technical State University (CoE))
Jared Webb (Dr.) (North Carolina Agricultural and Technical State University (CoE))
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Arvind Chandrasekaran
Simrit Safarulla

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Jared Webb (Dr.) (North Carolina Agricultural and Technical State University (CoE))
Stephen B. Knisley (Professor & Chair) (North Carolina Agricultural and Technical State University (CoE))
Arvind Chandrasekaran
Simrit Safarulla

**Surprises along the Path toward Equity in Engineering and Computer Science Education**

Rebecca A Atadero (Associate Professor) (Colorado State University)
Jody Paul (Professor) (Metropolitan State University of Denver)
Karen E Rambo-hernandez (Associate Professor)
Melissa Lynn Morris (Associate Professor In Residence) (University of Nevada - Las Vegas)
Robin A.M. Hensel (Assistant Dean for Freshman Experience)

Rebecca A Atadero (Associate Professor) (Colorado State University)
Jody Paul (Professor) (Metropolitan State University of Denver)
Karen E Rambo-hernandez (Associate Professor)
Melissa Lynn Morris (Associate Professor In Residence) (University of Nevada - Las Vegas)
Robin A.M. Hensel (Assistant Dean for Freshman Experience)

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Melissa Lynn Morris (Associate Professor In Residence) (University of Nevada - Las Vegas)
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Melissa Lynn Morris (Associate Professor In Residence) (University of Nevada - Las Vegas)
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Jody Paul (Professor) (Metropolitan State University of Denver)
Karen E Rambo-hernandez (Associate Professor)
Melissa Lynn Morris (Associate Professor In Residence) (University of Nevada - Las Vegas)
Robin A.M. Hensel (Assistant Dean for Freshman Experience)
Kenneth A Connor (Professor Emeritus) (Rensselaer Polytechnic Institute)
Craig J. Scott (Professor & Chair) (Morgan State University)
Pamela Leigh-mack (Professor) (Virginia State University)
Barry J. Sullivan (Director, Program Development)
John C. Kelly (Chairman, Electrical and Computer Engineering Department) (North Carolina Agricultural and Technical State University (CoE))
Stephen M Goodnick (Professor) (Arizona State University)
Mark JT Smith (Senior Vice Provost and Dean) (University of Texas at Austin)
Michelle Klein (Program Director) (Electrical and Computer Engineering Dept. Heads Assoc. (ECEDHA))
Miguel Velez-Reyes
Abdelnasser A Eldek (Dr.) (Jackson State University)
Shujun Yang
Hector Erives (Associate Professor of Practice) (University of Texas at El Paso)
Cole Hatfield Joslyn (Assistant Professor of Practice) (University of Texas at El Paso)
Ivonne Santiago (Associate Professor)
Peter L Romine (Associate Professor & Head Electrical Engineering) (Navajo Technical University)
Shayla Sawyer
Hassan Salmani
Delia Saenz (CDO) (Arizona State University)

**MIND THE GAP! …between engineers’ process safety beliefs and behaviors**

Jeffrey Stransky
Catla Ritz
Cheryl A Bodnar (Associate Professor, Experiential Engineering Education)
Emily Dringenberg (Assistant Professor) (The Ohio State University)
Elif Miskioglu (Assistant Professor)

**Collective Argumentation Learning and Coding (CALC)**

Tim Foutz (Professor)
AnnaMarie Conner
Jenna Menke (University of Georgia)
Joanna Gillespie Schneider (University of Georgia)
James Drimalla
Aida Alibek (University of Georgia)
Lorraine Franco
Shaffiq Nazir Welji (Student) (University of Georgia)

The XXX Engineering Academic Talent (HEAT) Scholarship Program: An Educational Model to Enhance Socio-Economic Mobility for Community College Students
Yoel Rodriguez (Professor)
Antonios Varelas
Clara Nieto-Wire

**Spaced Retrieval Practice in Undergraduate Engineering Courses: Psychometric Considerations**
Patricia A Ralston (Professor) (University of Louisville)
Campbell R Bego (Assistant Professor)

**An Assessment of Simulation-Based Learning Modules in an Undergraduate Engineering Economy Course**
Mahgol Nowparvar (Graduate research Assistant)
Omar Ashour (Associate Professor of Industrial Engineering) (Pennsylvania State University, Behrend College)
Sabahattin Gokhan Ozden (Assistant Professor)
Daniel Knight (Assessment Specialist) (University of Colorado Boulder)
Parhum Delgoshaei
Ashkan Negahban (Pennsylvania State University, Great Valley)

**Faculty Perspectives on Developing Interdisciplinary Computing Programs: Benefits, Necessary Supports, and Recommendations**
Maureen Smith
Valerie Carr (Dr.) (San Jose State University)
Belle Wei (San Jose State University)

**Investigating the Impact of Arts on Student Learning by Introducing Glass Science in the Materials Engineering Curriculum**
Katrina Donovan (Lecturer) (South Dakota School of Mines and Technology)
Jon J Kellar (Professor) (South Dakota School of Mines and Technology)
Michael West (Assoc. Professor & Chair) (South Dakota School of Mines and Technology)
Cassandra Birrenkott
Stuart D. Kellogg (Professor & Chair) (South Dakota School of Mines and Technology)
Deborah Jean Mitchell (Artist in Residence) (South Dakota School of Mines and Technology)
Matthew Whitehead (South Dakota School of Mines and Technology)

**Capacity-Building to Transform STEM Education Through Faculty Communities in Learning Analytics and Inquiry**
Amy B Chan Hilton
Shelly B. Blunt (Associate Provost for Academic Affairs) (University of Southern Indiana)
2022 ASEE ANNUAL CONFERENCE
WEDNESDAY, JUNE 29th SESSIONS

The AMPLIFY Project: Experiences of Engineering Instructional Faculty at HSIs
Yamile Aidee Urquidi (Graduate Research Assistant) (University of Texas at El Paso)
Henry Salgado (GRA) (University of Texas at El Paso)
Valerie Vanessa Bracho Perez (Graduate Research Assistant) (Florida International University)
Meagan R. Kendall (Associate Professor)
Alexandra Coso Strong (Florida International University)
Gemma Henderson (Director) (University of Miami)
Ines Basalo (Assistant Professor in Practice) (University of Miami)

Evaluation of three consecutive NSF S-STEM Awards (2008 – 2021) at a Predominantly Undergraduate Institution
Karinna M Vernaza (Dean and Professor) (Gannon University)
Scott Steinbrink (Gannon University)
Lin Zhao (Chair and Professor) (Gannon University)
Saeed Tiari
Varun K Kasaraneni (Assistant Professor) (Gannon University)

Digging Deeper with Data: Engineering Research Experiences for STEM Undergraduates and Teachers
Arash Jamshidi (Program Director) (University of California, Berkeley)
Elisa Stone (CalTeach Berkeley Program Director) (University of California, Berkeley)

Recognition of Subtle Bias Tempers Explicit Gender Stereotyping Among STEM Students
Darnishia Lashalle Slade (Michigan Technological University)
Logan Burley
Denise Sekaquaptewa (Professor)
Lorelle A Meadows (Founding Dean of Pavlis Honors College)

An NSF REU Site with Integrated Academia-Industry Research Experience – Four Years on the Road
Zhaoshuo Jiang
Juan M Caicedo (Professor and Chair) (University of South Carolina)
Robert Petrulis

A modular approach for integrating data science concepts into multiple undergraduate STEM+C courses
Mohammad Yunus Naseri (Ph.D. Student)
Caitlin Snyder
Brendan McLoughlin (Virginia Polytechnic Institute and State University)
Sambridhi Bhandari
Niroj Aryal

Gautam Biswas (Cornelius Vanderbilt Professor of Engineering) (Vanderbilt University)
Erin Henrick (Lecturer) (Vanderbilt University)
Erin Hotchkiss
Manoj K Jha (Dr.) (North Carolina Agricultural and Technical State University (CoE))
Steven X. Jiang (Associate Professor) (North Carolina Agricultural and Technical State University (CoE))
Emily Kern
Vinod K. Lohani (Professor) (Virginia Polytechnic Institute and State University)
Landon Todd Marston (Assistant Professor) (Virginia Polytechnic Institute and State University)
Christopher Vanags
Kang Xia

Eco-STEM: Transforming STEM Education using an Asset-based Ecosystem Model
Gustavo B Menezes (Professor)
Corin (Corey) Bowen
Jianyu Dong (Associate Dean) (California State University, Los Angeles)
Lizabeth L Thompson (Professor)
Nancy Wartung-Perez (California State University, Los Angeles)
Silvia Heubach
Daniel Galvan (Director of Acceleration Initiatives and Student Engagement) (California State University, Los Angeles)
Christina Restrepo Nazar (California State University, Los Angeles)

Something Old, Something New: Lessons Learned from Pivoting an REU Site during the COVID Pandemic
Brittain Sobey (Academic Advising Coordinator) (University of Texas at Austin)
Maura Borrego (Professor, Department of Mechanical Engineering, Cockrell School of Engineering Professor, STEM Educ) (University of Texas at Austin)
Mia K. Markey (Professor)

The effects of gender and URM status on the engineering professional identity of upper-year engineering students
Sara A. Atwood (Dean of the School of Engineering, Mathematics, and Computer Science, and Associate Professor of Phy)
Shannon Katherine Gilmartin (Senior Research Scholar/Adjunct Professor) (Stanford University)
Sheri Sheppard (Professor) (Stanford University)

Evidence-based Opportunities for the Development of Empathy in Engineering through Community-based
Learning
Linjue Wang (Graduate Research Associate) (The Ohio State University)
Nia Johnson
Joachim Walther (Professor) (University of Georgia)

Identifying mental health related help-seeking beliefs in undergraduate engineers
Sarah A Wilson (Assistant Professor)
Joseph H Hammer
Courtney Janaye Wright (Ms.) (University of Kentucky)
Ellen L Usher

Effects of Community Cultural Wealth on Black and Hispanic Women’s Persistence in P-20 Computing Education
Shetay Ashford-Hanserd ASHFORD-HANSERD (Principal Investigator)
Lillianna Franco Carrera

Leadership Succession in the National Science Foundation Revolutionizing Engineering Departments Projects
Julia M. Williams (Professor of English)
Eva Andrijcic (Associate Professor of Engineering Management) (Rose-Hulman Institute of Technology)
Cara Margherio (Assistant Director) (University of Washington)
Elizabeth Litzler (Director) (University of Washington)
Sriram Mohan (Professor of Computer Science & Software Engineering) (Rose-Hulman Institute of Technology)
Selen Güler

Retention of student participants in an S-STEM funded program versus comparable students in engineering
Jacqueline Gartner (Assistant Professor)
Michele Miller (Associate Dean)

Explaining Choice, Persistence, and Attrition of Black Students in Electrical, Computer, and Mechanical Engineering: Award# EEC-1734347 Grantee Poster Session - Year 4
Catherine Moley (Dr.) (Clemson University)
Marisa K. Orr (Associate Professor)
Catherine E. Brawner (President)
Rebecca Brent (President)
Jessica Allison Manning (Graduate Research Assistant)
Michael L Tidwell

Improving Community College Students’ STEM Motivation and Achievement by Implementing Utility-Value Interventions
Delaram A Totonchi (University of Virginia)
Emma Huelskoetter

Bradley Ferrer
Chris Hulleman (Associate Professor) (University of Virginia)

Parental perspectives: Examining caregiver experiences and perceptions of growth and learning within an out-of-school elementary engineering program
Peter N. Knox (Doctoral Candidate) (State University of New York at Binghamton)
Kelli Paul
Junsun Kim (Research Scientist) (Indiana University-Bloomington)
Jing Yang
Sawsan Werfelli (State University of New York at Binghamton)
Amber Simpson (Assistant Professor) (State University of New York at Binghamton)
Adam Maltese (Martha Lea and Bill Armstrong Chair for Teacher Education)

IMPLEMENTING CURRICULAR AND CO-CURRICULAR BEST PRACTICES TO INCREASE AND RETAIN FEMALE ENGINEERS
Katrina Donovan (Lecturer) (South Dakota School of Mines and Technology)
Jon J Kellar (Professor) (South Dakota School of Mines and Technology)
Paula H Jensen (Ph.D. Candidate) (Texas Tech University)
Michael West (Assoc. Professor & Chair) (South Dakota School of Mines and Technology)
Stuart D. Kellogg (Professor & Chair) (South Dakota School of Mines and Technology)

The Development of Sociotechnical Thinking in Engineering Undergraduates
Kathryn Johnson (Professor)
Stephanie Claussen (Assistant Professor)
Jon A. Leydens (Professor)

Research Initiation: Exploring the Associations Between Personality Attributes and Transformative Learning of Engineering Study Abroad Program Participants
Cedrick Kwuimy (Assistant Professor) (University of Cincinnati)
So Yoon Yoon (Assistant Professor)
Sheryl A. Sorby (Professor) (University of Cincinnati)
Stephanie Farrell (Professor and Department Head)

Development, dissemination and assessment of
inexpensive miniature equipment for interactive learning of fluid mechanics, heat transfer and biomedical concepts

Bernard J. Van Wie (Professor)
Zeynep Ezgi Durak
Olivia Reynolds (Graduate Student)
Kitana Kaiphanliam (PhD Candidate) (Washington State University)
David B. Thiessen (Scholarly Assistant Professor)
Olusola Adesope (Professor)
Olufemi Johnson Ajeigbe
Aminul Islam Khan
Prashanta Dutta (Professor) (Washington State University)
Carah Elyssa Watson
Jacqueline Gartner (Assistant Professor)

Developing and encouraging engineering professionals within a commuter student population: Understanding commuter student integration

Cory Brozina (Assistant Professor and Director of First Year Engineering)

Launching a Holistic Student Support & Scholarship Program

Rickey A. Caldwell (Associate Professor)
Julia St. Goar (Associate Professor of Mathematics) (Merrimack College)
Brandi Lee Baldock (Assistant Professor) (Merrimack College)
William G McDowell (Associate Professor)

Building S-STEM scholars’ knowledge and skills through technical and career-development seminars

Katerina Goseva-Popstojanova (Professor) (West Virginia University)
Erin Carll
Elizabeth Litzler (Director) (University of Washington)
Robin A.M. Hensel (Assistant Dean for Freshman Experience)

Creating Significant Learning Experiences in an Engineering Technology Bridge Course: a backward design approach

Adrian Villalta-cerdas
Faruk Yildiz (Professor) (Sam Houston State University)

Divergent thinking in engineering: Diverse exploration is key to successful project outcomes

Laura Murphy
Shannon M Clancy (PhD Candidate)
Shanna R. Daly (Associate Professor) (University of Michigan)
Colleen M. Seifert (Professor) (University of Michigan)

STEM Scholars Engaging in Local Problems

Esther Tian (Professor)
Daniel A Showalter
Tara Kishbaugh (Dean of Science, Engineering, Arts, & Nursing )
Scott Barge

Experiences in Creativity and Design as Antecedents to Success and Comfort with Design in College

Micah Lande (Assistant Professor)

Addressing National Advanced Manufacturing Workforce Needs

Karen Wosczyna-birch (Director)
Wendy Robicheau

Cultivating a Culture to Foster Engineering Identity

Yen-Lin Han (Associate Professor)
Kathleen E. Cook (Dr.)
Gregory Mason (Seattle University)
Teodora Rutar Shuman (Professor and Chair) (Seattle University)
Jennifer A Turns (Professor)

Perspectives of Engineering Faculty and Practitioners on Creativity in Solving Ill-Structured Problems

Secil Akinci-celaylan
Kristen Sara Cetin (Assistant Professor) (Michigan State University)
Benjamin Ahn (Associate Professor)

Reducing Student Resistance to Active Learning Through Instructor Development: Project Update

Lea K. Marlor (University of Michigan)
Cynthia J. Finelli (Professor)
Maura Borrego (Professor, Department of Mechanical Engineering, Cockrell School of Engineering Professor, STEM Educ) (University of Texas at Austin)
Michael J. Prince (Professor) (Bucknell University)
Madeleine Smith (University of Oregon)

Student Satisfaction and Perceptions of Summer REU Experience in an Engineering/Communicative Disorders Focused Site at Program Midpoint

Todd Freeborn (The University of Alabama)
Memorie Gosa
Debra Moehle Mccallum
Erika Machan Steele (Research Associate) (The University of Alabama)

Mobile, hands-on experiments for classroom demonstrations and student team-based exercises
WEDNESDAY, JUNE 29TH SESSIONS

Aldo A. Ferri (Professor)

US-Sweden Bioinformatics NSF-IRES Year 1: Program Development and Initial Lessons Learned
Mark A Chapman (Assistant Professor) (University of San Diego)

REU Site on UAV Technologies: Impact of the Program on Participants’ Career in Industry or Graduate School
Subodh Bhandari (Professor) (California State Polytechnic University, Pomona)
Erika Dejonghe (Assoc Prof)
Amar Raheja
Fang Tang (Chair and Professor)
Zekeriya Aliyazicioglu (Professor) (California State Polytechnic University, Pomona)

Student Progress after a Learning in Advance Course to Prepare Engineering Students for Circuit Analysis in Electrical Engineering
Todd Freeborn (The University of Alabama)

Work In Progress: Initiating a graduate teaching fellow program to support undergraduates transferring into engineering and computing programs
Marian S. Kennedy (Associate Professor)
William Ferriell
Spencer Davenport (Clemson University)
Kaitlynn Conway (Clemson University)

Research Experience for K-5 Educators to Enrich the STEM Ecosystem by Producing Accessible Curricula Based on National Standards
Yuan Li (Student) (University of Florida)
Peyton Turinetti (University of Florida)
Sarah Furtney

Developing a Hands-on Data Science Curriculum for Non-Computing Majors
Xumin Liu
Erik Golen
Rajendra K Raj (Dr) (Rochester Institute of Technology (GCCIS))

Examining the Association between Peer Support and Young Women’s Engineering Identity and Major Intentions
Ursula Nguyen
Catherine Riegle-crumb

Framing Engineering as Community Activism for Values-Driven Engineering: RFE Design and Development (Years 3-4)
Virginia A. Davis (Alumni Professor)

Joni Lakin (Associate Professor) (The University of Alabama)
Daniela Marghitu (Dr.)
Edward Davis

Engineering Ethics Through High-Impact Collaborative/Competitive Scenarios (E-ETHICCS): Initial Results and Lessons Learned
Scott Streiner (Visiting Assistant Professor, Industrial Engineering Department)
Daniel D. Burkey (Associate Dean for Undergraduate Education &amp; Diversity) (University of Connecticut)
Kevin D. Dahm (Professor of Chemical Engineering)
Richard Tyler Cimino (Senior Lecturer)
Jennifer Pascal (Associate Professor in Residence)

Recruitment Strategy Development for First Generation, Underrepresented, and Low-Income Masters Students
Briceland Mclaughlin (Senior Advisor) (Boise State University)
Julianne A. Wenner (Associate Professor) (Clemson University)

Using Virtual Delivery to Build Interest in Technology Careers
Karen Wosczyna-birch (Director)
John Birch

Conocimiento as a Framework: Promoting a Culturally Affirming Identity Development for Latinx Engineers
Joel Alejandro Mejia (Dr.)

Cybersecurity for Everybody - A Multi-Tier Approach to Cyber Security Education, Training, and Awareness in the Undergraduate Curriculum
Nikunja Swain (Professor and Chair) (South Carolina State University)

East Tennessee Noyce STEM Teacher Preparation Program
Mohammad Moin Uddin (Dr.) (East Tennessee State University)
BEVERLY SMITH (East Tennessee State University)

Second-Year Review of the NSF-DoD REU Site: HYPER
Ali Gordon

Enabling Data Science Education in STEM Disciplines through Supervised Undergraduate Research Experiences
Yaser Banadaki (Associate Professor) (Southern University and Agricultural &amp; Mechanical College)

Implementing Inclusive Paths to Employment and Degree Completion in a Community College Engineering Technology Program
Eugene Leo Draine Mahmoud (Professor)
W45190 - EMD Technical Session 3: Measuring Engineering Management
11:30 am - 1:00 pm
102A, Convention Center

Hear how engineering management researchers are analyzing data to improve engineering management.

**Measuring the Systems Engineering Management Skills of Undergraduate Students using a New Valid and Reliable Instrument**
- Joni Hossain Pintu (Mr.)
- Niamat Ullah Ibne Hossain
- Ziaul Haque Munim
- Alexandr Mikhail Sokolov (Arkansas State University)

**Identification of quality attributes for effective teaching in a systems engineering course**
- Sandra Furterer

**Is Engineering Management Really an Engineering Field of Study?**
- Jena Shafai Asgarpoor (Professor of Practice & MEM Program Director)
- Neal A Lewis (University of Nebraska - Lincoln)

**Comparing Course Outcomes of Hybrid Delivery with Classroom-based Instruction in an Introductory Engineering Management Course**
- Suzanna Long (Dr.) (Missouri University of Science and Technology)
- David Spurlock (Associate Teaching Professor)
- Kellie Grasman

W77121 - Biomedical Engineering Division: Developing Lab and Research Skills for BioE/BME Students
11:30 am - 1:00 pm
205D, Convention Center

**Moderators: Yanfen Li (Assistant Teaching Professor), Naji S Husseini (Associate Teaching Professor) (North Carolina State University at Raleigh)**

This Biomedical Engineering technical session will include four full-paper presentations from authors who have performed studies related to the development of lab and research skills for bioengineering/biomedical engineering students. Moderators may encourage small group discussion or other engaging activities with attendees related to this topic in the latter part of the session.

**Impact of Two Reflective Practices in an Engineering Laboratory Course using Standards-based Grading**
- Casey Jane Ankeny (Associate Professor of Instruction) (Northwestern University)
- Amy Adkins (Assistant Teaching Professor)
- David O#39;Neill

**Impact of lab experiences on student knowledge and confidence**
- Eileen Haase (Senior Lecturer) (The Johns Hopkins University)
- Natsuki Furukawa (The Johns Hopkins University)
- Akash Patil (The Johns Hopkins University)
- Amanda Ruci

**Virtual vs face-to-face synchronous laboratory instruction for programming matlab for biomedical engineers**
- Benjamin Hawkins (Assistant Professor)

**US-Sweden Bioinformatics IRES: Investigating Engineering Students’ Attitudes and Perspectives Throughout a 10-week International Research Program**
- Mark A Chapman (Assistant Professor) (University of San Diego)
- Marissa H. Forbes (Research Associate)

W380 - Experimentation and Laboratory-Oriented Studies Business Meeting

Business meeting to discuss division updates and planning for the 2023 conference.
11:30 am - 1:00 pm  
L100C, Convention Center  
Business Meeting

**W39260 - Mechanical Engineering: Adjusting Course Content**

11:30 am - 1:00 pm  
200B, Convention Center  
Speaker: Matthew Ford

*Machining Experience in a Freshman Mechanical Engineering Class*  
Scott Kiefer  

*Teaching Control Systems With Pong*  
Aaron Estes  
Heeyun Heeyeun Shon (University at Buffalo, The State University of New York)

*Low-Cost Haptics and Visualization to Learn the Atomic Force Microscope Force-Distance Curve*  
Nisal Ovitigala  
Benita Comeau (Massachusetts Institute of Technology)  
Emily Welsh  
Nicholas Xuanlai Fang (Massachusetts Institute of Technology)  
John Liu (Dr.)

*Introducing Automation Concepts in a "Mechanisms and Robotics" Course*  
John Mirth

**W30128 - Computers in Education 11 - Modulus 3**

11:30 am - 1:00 pm  
206, Convention Center  
Moderator: Joshua Chibuike Nwokeji (Associate Professor) (Gannon University)

*Implications of Emergency Remote Teaching During COVID-19 Lockdown: an Exploratory Analysis*  
Tajmilur Rahman (Dr) (Gannon University)  
Joshua Chibuike Nwokeji (Associate Professor) (Gannon University)  
Terry Stephen Holmes (Asst. Professor) (Gannon University)

*Digital transformation in engineering education: a gap between teaching and management*  
Inesmar Carolina Briceno Rivero (Universidad Andres Bello)  
Maria Elena Truyol

*Multidisciplinary Engagement of Diverse Students in Computer Science Education through Research Focused on Social Media COVID-19 Misinformation*  
David C Brown (University of North Carolina at Charlotte)  
Erfan Al-hossami (University of North Carolina at Charlotte)  
Zhuo Cheng (University of North Carolina at Charlotte)  
Samira Shaikh (University of North Carolina at Charlotte)  
Daniel Andrew Janies (Carol Grotnes Belk Distinguished Professor)  
Mesbah Uddin (Professor) (University of North Carolina at Charlotte)

**W55268 - Tools to Foster Students' (Cross-)cultural Sensitivity in Engineering Ethical Decision-Making**

11:30 am - 1:00 pm  
Minnehaha, Hyatt Regency  
Speakers: Rockwell Clancy, Qin Zhu (Assistant Professor) (Colorado School of Mines)

**W56398 - Mechanics Division Business Meeting**
How Do Engineering Students Characterize Their Educational Experience on a Popular Social Media Platform Before and During the Covid-19 Pandemic?
Zheng Chen (University of Hong Kong)
Andrew L Gillen (Assistant Teaching Professor)

W22440 - Engineering Libraries Division Technical Session 7: Library Collaboration

11:30 am - 1:00 pm
Greenway CDE, Hyatt Regency
Moderator: Jennifer Long (University of Alabama at Birmingham)
Speakers: Heidi Southworth (Associate Professor and Digital Initiatives Librarian), Rebecca A Bates (Professor & Chair), Leah M Wiitablake (Clemson University), D. Matthew Boyer (Research Associate Professor) (Clemson University), Yang Wu (Open Resources Librarian) (Clemson University), Chris A Wiley

The Ties that Bind: Library E-Resources and Faculty Research
Chris A Wiley

The Role of Libraries in Collaborative OER Development
Leah M Wiitablake (Clemson University)
D. Matthew Boyer (Research Associate Professor) (Clemson University)
Yang Wu (Open Resources Librarian) (Clemson University)

“But I'm not an Engineer”... Collaboration between a Librarian and an Upper Division Project-Based Engineering Program
Heidi Southworth (Associate Professor and Digital Initiatives Librarian)
Rebecca A Bates (Professor & Chair)
Rob Sleezer (Associate Professor, Twin Cities Engineering)

W15249 - ERM: Identity Impacts (Identity Part 2)

11:30 am - 1:00 pm
Nicollet A, Hyatt Regency
Moderators: Andrea Surovek, Rachel Louis Kajfez (Assistant Professor)
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

This sequel to the earlier Engineering Identity session will explore the impact of identity.

Internships' Impact on Recognition for First-Generation and/or Low-Income Students
Jerry Austin Yang (Student)
Joseph Towles (Lecturer)
Sheri Sheppard (Professor) (Stanford University)
Sara A. Atwood (Dean of the School of Engineering, Mathematics, and Computer Science, and Associate Professor of Phy)

“At the Bottom of the Food Chain”: Constructing Academic Identity in Engineering Education as International Graduate Students
Cristian Eduardo Vargas Ordonez
Siqing Wei
Tiantian Li

BSTiE: A Proposed Conceptual Framework for Black Student Thriving in Engineering
Stephanie A Damas
Lisa Benson (Professor)

The Impact of Gender Identity on Early-Career Engineer's Perception of Expertise
Caroline Bolton (Bucknell University)
Elif Miskioglu (Assistant Professor)
Madeline Roth (Bucknell University)

Potential of a Values Affirmation Intervention for Marginalized Gender Students' Belonging and Recognition
Heather Perkins
Allison Godwin (Associate Professor)
Edward J. Berger (Professor) (Purdue University at West Lafayette (COE))
Justin Charles Major (Research Assistant)

W12423 - Software Engineering Business Meeting

11:30 am - 1:00 pm
M100A, Convention Center

Business meeting for the Software Engineering Division of ASEE
W35259 - LEES 6: Writing & Communication

11:30 am - 1:00 pm
200D, Convention Center

Moderator: Harly Ramsey (Associate Professor of Technical Communication Practice)

Speakers: Julie Stella (Lecturer and Program Director) (IUPUI), Kathryn A. Neeley (Associate Professor) (University of Virginia), Immanuel Edinbarough, Sheila Anne Gobes-ryan (Assistant Professor of Instruction), Rebecca R Essig (Assistant Professor) (Purdue University Fort Wayne)

Written Communication to Achieve Data Literacy Goals in a Probability and Statistics Course

Sheila Anne Gobes-ryan (Assistant Professor of Instruction)
Kingsley A. Reeves (Associate Professor)
Elizabeth Frances Vicario (University of South Florida)
Walter Alejandro Silva Sotillo (University of South Florida)
Victor Ventor (University of South Florida)
Ardis Hanson (Assistant Director, Research and Education, USF Health Libraries)

Thinking Beyond the Service Course Model: Intentional Integration of Technical Communication Courses in a BME Undergraduate Curriculum

Julie Stella (Lecturer and Program Director) (IUPUI)
Steven Higbee (Clinical Assistant Professor) (Indiana University - Purdue University Indianapolis)
Sharon Miller (Clinical Associate Professor)

Writing education examples throughout a first-year engineering course

Rebecca R Essig (Assistant Professor) (Purdue University Fort Wayne)

Comparison of Undergraduate Student Writing in Engineering Disciplines at Campuses with Varying Demographics

Immanuel Edinbarough
Jesus Gonzalez (The University of Texas Rio Grande Valley)
Johanna Bodenhamer (IUPUI)
Ruth Camille Pfueger (Director) (Pennsylvania State University, Behrend College)
Robert Weissbach

W75559 - Member Feedback on New Website, Business, and Paper Management Systems

11:30 am - 1:00 pm
Ballroom A, Convention Center

Member Feedback on New Website, Business, and Paper Management Systems

W6124 - Works in Progress: Chemical Engineering Education

11:30 am - 1:00 pm
200A, Convention Center

Work-in-Progress: Improving Safety Education for Undergraduate Chemical Engineers

George Prpich (Assistant Professor)

Work-In-Progress: Changing the Goal Structure in a Problem-Solving Course

Carl F. Lund (Chair and SUNY Distinguished Teaching Professor)

Work-in-Progress: Student reactions to an Open Textbook on Mass and Energy balances

Konstantinos Apostolou (McMaster University)
Amin Rajabzadeh (Assistant Professor) (McMaster University)

Work-in-progress: Identifying unit operations laboratory curriculum needs

Sarah A Wilson (Assistant Professor)
Tracy L. Carter (Part-time Faculty)
Amy J Karlsson
Janie Brennan (Senior Lecturer)
Joanne Beckwith

W73296 - How to Become an Inclusive Leader

11:30 am - 1:00 pm
Lakeshore A, Hyatt Regency

Speaker: Meagan Pollock

Belonging and being valued are fundamental human needs. Inclusive leadership helps address these two crucial needs
and enhances performance, collaboration, and attendance, and reduces turnover. Inclusive leaders are imperative for creating cultures, schools, teams, and organizations that drive equitable outcomes for historically marginalized and minoritized people. This workshop examines a four-part, iterative, reflective, and reflexive model for developing into an inclusive leader.

W75305 - ASEE Awards Lunch
Sponsored by Dassault Systemes, Minnesota State University, Mankato, NCEES & The Boeing Company

11:30 am - 1:00 pm
Ballroom B, Convention Center

This is a ticketed session. To add this ticket to your registration, please click the button below. 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, including our national award winners. The lunch is complimentary for award winners and their guests. Others may attend for $50.

W85467 - ETD - Focus on ETAC Accreditation

11:30 am - 1:00 pm
M100HI, Convention Center

With ABET accreditation, students, employers, and the society we serve can be confident that a program meets the quality standards that produce graduates prepared to enter a global workforce. Criteria for Accrediting Engineering Technology Programs, 2022–2023: https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-technology-programs-2022-2023

W9657 - CIT Division Technical Session #10

11:30 am - 1:00 pm
M101C, Convention Center

Moderator: Afsaneh Minaie
Speakers: Alvis Fong, Yosi Shibberu (Professor) (Rose-Hulman Institute of Technology), Joshua B. Gross (Professor)

The following papers will be presented during this session:
087: Promoting AI Trustworthiness through Experiential Learning. (Alvis Fong)
101: A Team-Taught Undergraduate Course on Data Mining. (Yosi Shibberu)
120: Building a Model of Polymorphism Comprehension. (Joshua Gross)

Promoting AI Trustworthiness through Experiential Learning

Alvis Fong
Steven Carr (Professor & Chair) (Western Michigan University)
Ajay Gupta (Professor) (Western Michigan University)
Shameek Bhattacharjee (Assistant Professor) (Western Michigan University)

A Team Taught Undergraduate Course on Data Mining
W7404 - Civil Engineering Division Planning Session

11:30 am - 1:00 pm
L100B, Convention Center

Moderator: Jennifer Retherford (Distinguished Lecturer)

All members are welcome to this meeting to determine sub-committee chairs and develop the Call for Papers for the 2023 National Conference for each sub-committee. Sub-committees are ASCE Liaison Committee, Committee on Effective Teaching, Committee on Educational Policy, Committee on Instructional Technologies, and Committee on Professional Practice.

W85462 - ETD Business Meeting

11:30 am - 1:00 pm
Room: L100D, Convention Center

The Engineering Technology Division (ETD) of the American Society for Engineering Education (ASEE) 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. A number of engineering educators are also members. ETD sponsors national and regional meetings, publishes a newsletter, promotes studies of engineering technology, and publishes a journal. The Engineering Technology Division acts as a general forum for the exchange of ideas pertinent to the disciplines, administration, and industrial interests in engineering technology education. It offers members an opportunity to become involved in up-to-date information exchange and personal contacts with others sharing similar interests. You can join the Engineering Technology Division through the ASEE website (http://www.asee.org) as part of being an ASEE member.

W75475 - ASEE Student Showcase

1:00 pm - 4:00 pm
Exhibit Hall A, Convention Center

ASEE Student Showcase

The Student Showcase is an...
opportunity for students at the high school, college, graduate, and post-doctoral levels to share their engineering projects with researchers, mentors, industry representatives, and most importantly, with one another!

**W75531 - ASEE Community College Leadership Summit**

1:00 pm - 5:00 pm  
L100B, Convention Center

This summit, co-organized by Vearl D. Turnpaugh (Ivy Tech) and Greg Wilson (Pima CC), and co-located with the ASEE Annual Conference and Exposition, will provide community college presidents, vice presidents, provosts, and deans a crucial opportunity to meet and discuss the ways in which ASEE can better serve the entire community college ecosystem. Come join the conversation and be part of our effort to better represent, serve, and highlight the achievements of the country’s most diverse and innovative system of higher education!

**W75532 - Free Time**

1:00 pm - 1:45 pm  
Exhibit Hall B & C Foyer, Convention Center

Take this time to relax, refresh, and catch up on emails! Then return ready to attend more of the exciting sessions the ASEE Annual Conference has to offer!

**W75627 - ASEE Officer Feedback Session on New BASS App**

1:00 pm - 1:45 pm  
Ballroom A, Convention Center

ASEE Officer Feedback Session on New BASS App: Open to Officers of Divisions, Councils, Committees, Commissions, and Zones

**W35607 - DISTINGUISHED LECTURE: Queering STEM Culture in US Higher Education: Navigating Experiences of Exclusion in the Academy**

1:45 pm - 3:15 pm  
Auditorium 3, Convention Center

Moderator: Donna M Riley (Kamyar Haghighi Head, School of Engineering Education) (Purdue University at West Lafayette (COE))

Speakers: Kelly J Cross (Assistant Professor), Stephanie Farrell (Professor and Department Head), Bryce E. Hughes (Associate Professor), Sean Ferguson

ASEE has taken on several DEI initiatives over the years, the current Year of Impact on Racial Equity is a case in point. The topic for this distinguished lecture continues the conversation of justice and inclusion within higher education, particularly in the world of STEM. The invited speakers are three leading experts in the field of racial, ethnic, gender, LGBTQ+, and intersectional issues. They have held leadership positions in ASEE and in other institutions where they have promoted engagement in application of their own research. Drs. Kelly J. Cross, Stephanie Farrell, and Bryce Hughes will use their experience editing a book on Queering STEM Culture to bring powerful narratives of inclusion and exclusion from our own STEM post-secondary peers to the attention of ASEE. It is a bit unusual in that all three co-editors will be on stage, but we hope that the multiple standpoints will represent the values of diversity ASEE members promote.

The talk will be both reflection on existing challenges as well as guidance to become allies. Book Summary: Adopting an intersectional lens, this timely volume explores the lived experiences of members of the queer and trans community in post-secondary STEM culture in the US to provide critical insights into progressing socially just STEM education pathways. Offering contributions from students, faculty, practitioners, and administrators, the volume highlights prevailing issues of heteronormativity and marginalization across a range of STEM disciplines. Autoethnographic accounts place minority experiences within the broader context of social and cultural phenomena to reveal subtle and overt forms of exclusion, and systematic barriers to participation in STEM professions, academia, and research. Finally, the book offers key recommendations to inform future research and practice. This volume will benefit researchers, academics, and educators with an interest in higher education, engineering education, and the sociology of science.
of education more broadly. Those involved with diversity, equity, and inclusion within education, queer theory, and gender and sexuality studies will also benefit from this volume.

**W35654 - DISTINGUISHED LECTURE: The Trouble with Passion: How Searching for Fulfillment at Work Fosters Inequality**

1:45 pm - 3:15 pm
Auditorium 2, Convention Center

*Moderator: Athena Lin (Graduate Student)*
*Speakers: Sean Ferguson, Erin Cech*

A co-sponsoring group of Community Engagement; LEES; and Equity, Culture, and Social Justice support Erin Cech as a distinguished lecturer for the Annual Conference 2022. Erin will primarily outline the main arguments from her recent book exploring the passion principle. For engineering students, educators, and engineering professionals, we hope that the lecture would encourage us to think through how inequities in success and bouncing back from failure develop from passion-seekers' differential access to springboards and safety nets. Second, passion-seeking can entrench occupational gender and race segregation when entwined with social biases about who fits in what fields. Finally, passion can be exploited by employers and managers in such a way that the passion principle reinforces neoliberal norms of personal responsibility that obfuscate institutions from blame for addressing structural obstacles that students and workers face. The Great Quit and skepticism of higher education is arguably a moment of reconciling the tensions. Follow your passion is a popular mantra for career decision-making in the United States. In this talk, I discuss my forthcoming book on this ubiquitous cultural narrative that I call the passion principle. The passion principle is rooted in tensions between postindustrial capitalism and cultural norms of self-expression and is compelling to college-educated career aspirants and workers because passion is presumed to motivate the hard work required for success while providing opportunities for meaning and self-expression. Although passion-seeking seems like a promising option for individuals hoping to avoid drudgery in their labor force participation, I argue that the passion principle has a dark side: it reinforces socio-economic disadvantages and occupational segregation among career aspirants and workers in the aggregate and helps reproduce an exploited, overworked white-collar labor force. These findings have implications for cultural notions of "good work"; popular in higher education and the US workforce and raise broader questions about what it means when becoming a dedicated labor force participant feels like an act of self-fulfillment.

**W17664 - DISTINGUISHED LECTURE: Renewable Energy Education, Training, and Outreach in the Midwest**

1:45 pm - 3:15 pm
Auditorium 1, Convention Center

*Speaker: Nick Hylla*

Mr. Nick Hylla is the Executive Director of the Midwest Renewable Energy Association (MREA), a 501(c)(3) organization that promotes renewable energy, energy efficiency, and sustainable living through education and demonstration. Together with partners around the Midwest, the MREA works to expand renewable energy adoption through innovative programs, renewable energy training, and educational events including their well-known annual "Energy Fair" every June. In this distinguished lecture presentation, Mr. Hylla presents his vision and the strategies used by the MREA to educate students as well as the general public about renewable energy technologies.

**W15665 - DISTINGUISHED LECTURE: The Future is Brown and Black: Re-imagining our Relationship with Research**

1:45 pm - 3:15 pm
211, Convention Center

*Moderators: Allison Godwin (Associate Professor), Kerrie A Douglas (Assistant Professor of Engineering Education)*
*Speaker: Stephanie Masta (Associate Professor)*

For too long researchers have hid behind false notions of objectivity and neutrality to avoid holding themselves accountable for the harms committed in the name of research. However, as the racially-centered events of the last two years have demonstrated, the time for accountability...
is now. But rather than reflect on past wrongs, the Year of Racial Equity gives us the opportunity to look forward. We must and should reimagine a new path forward for educational research. We must rethink several fundamental aspects of the research process: our roles as researchers, our relationship to various concepts (e.g. neutrality, objectivity, bias), even what research can and cannot do. Our new path forward requires dismantling the status quo and rebuilding the research process to reflect a new set of goals and values, goals and values that empower us and challenge us to move beyond the white-centered way research exists today. The purpose of this Distinguished Lecture is to begin a conversation on what a paradigmatic shift in engineering education research looks like. What does the path forward look like today? What does it look like in 10 years? In 20 years? Institutional change always starts with individuals, and we have an opportunity to move the field of engineering education research forward in ways that empower everyone.

This is a ticketed session. To add this ticket to your registration, please click the button below.

**W73662 - DISTINGUISHED LECTURE: Meditations on the Words of a Black King: The Wicked Problem of Shallow Understanding**

1:45 pm - 3:15 pm  
101C, Convention Center  
_Moderator: Jeremi S London (Associate Professor)  
_Speaker: James Holly, Jr. (Assistant Professor)  

Unlike King who was referencing white moderates, I refer to people of all races, as anti-Black prejudice and internalized racism expand perpetrators beyond just white people. In this address, I will discuss how shallow understanding, a superficial understanding of the contributing factors to racial inequity, remains a grand challenge to racial equity in engineering education. I will share my thoughts on the implications of this wicked problem for engineering teaching, research, and practice.
Brainstorming During Conceptual Design: Challenges and Recommendations Authors: Ahmed Osman; Eric Cuellar, California Polytechnic State University, San Luis Obispo; Aimee Tai Chiem, California Polytechnic State University, San Luis Obispo; Christianna Bethel; Benjamin David Lutz, California Polytechnic State University, San Luis Obispo

W85456 - ETD - STEM Issues in ET II

3:30 pm - 5:00 pm
205A, Convention Center

Current issues in ET and integration of those into ET curriculums (IoT, Industry 4.0, globalization, sustainability, ethics, alternative energy, etc.)

Balancing theory and practical application in ET curriculums

Capstone course implementation (concerns, issues, methods, use for assessment, etc.)

Do They Need What We Teach? A Comparative Study of What Advanced Manufacturing Frameworks Require and What Employers Desire

Faye R Jones (Dr.) (Florida A&M University - Florida State University)
Marcia A. Mardis (Dr.) (Florida A&M University - Florida State University)

Teaching AutoCAD in E-learning and Face-to-Face Styles for Undergraduate Engineering Technology Students During and after COVID-19 Pandemic

Suleiman Obeidat (Assistant Professor)
Ulan Dakeev (Assistant Professor) (Sam Houston State University)
Junkun Ma (Professor) (Sam Houston State University)

Student and Faculty Perspectives on Undergraduate Cheating Frequency and Severity

Yooneun Lee (Assistant Professor)
Khalid Zouhri (Assistant Professor)
Alexander Watson

W92314 - ASEE Nominating Committee

3:30 pm - 5:00 pm
M100A, Convention Center

W9257 - CIT Division Technical Session #11

3:30 pm - 5:00 pm
M101C, Convention Center

Moderator: Quamar Niyaz

Speakers: Alireza Kavianpour (Professor) (DeVry University, Pomona), Byul Hur (Assistant Professor), Peng Li (East Carolina University)

The following papers will be presented during this session:

082: A Student Senior Project: Magneto Hydrodynamic Renewable. (Alireza Kavianpour)
097: Low-Cost Raspberry Pi Compute Module 3 Cluster for Mosquito Research via Capstone Project. (Byul Hur)
098: Redesigning Cybersecurity Labs with Immediate Feedback. (Peng Li)
121: Mini-Projects-Based Cybersecurity Modules for an Operating System Course Using xv6. (Quamar Niyaz)

A Student Senior Project: Magneto Hydrodynamic Renewable Power

Alireza Kavianpour (Professor) (DeVry University, Pomona)

Low-Cost Raspberry Pi Compute Module 3+ Cluster for Mosquito Research via Capstone Project

Byul Hur (Assistant Professor)

Redesigning Cyber Security Labs with Immediate Feedback

Peng Li (East Carolina University)

Mini-projects based Cybersecurity Modules for an Operating System Course using xv6

Jansen Tan (Purdue University Northwest)
Divya Ravindra (Purdue University Northwest)
Quamar Niyaz
Ahmad Javaid

W86367 - Funding for New Engineering Education Researchers: Applying to the NSF RIEF Program

3:30 pm - 5:00 pm
Lakeshore C, Hyatt Regency

Speakers: Julie Martin, Chiebuka Egwunwu (The Ohio State University), Karin Jensen (Prof.), Isabel Miller

This is a ticketed session. To add this ticket to your registration, please click the button below Workshop
Description: In this workshop, we will provide information about the NSF Professional Formation of Engineers Research Initiation in Engineering Formation (PFE: RIEF) funding opportunity. The RIEF funding mechanism provides an excellent opportunity for engineering faculty members with little to no experience in engineering education research to work with an experienced mentor on a funded project. The workshop will address two main goals: 1) provide information about the RIEF program, including scope and project budgets and 2) provide strategies to prepare a successful RIEF application, with a focus on the PI Mentoring Plan. Participants will be provided with sample PI Mentoring Plans and lists of questions to consider when developing a Mentoring Plan. Additionally, participants will be provided with information on developing a project budget. Speakers will include current NSF RIEF awardees and a former NSF program officer who previously oversaw the RIEF program. After our interactive session, attendees will be able to: Review the RIEF solicitation and identify criteria specific for the solicitation Identify strengths of funded RIEF proposals Identify resources for developing a project budget and writing an effective PI Mentoring Plan.

List of Speakers: Julie Martin, Ph.D., The Ohio State University Chiebuka Egwuonwu, The Ohio State University Karin Jensen, Ph.D., University of Illinois Urbana-Champaign Isabel Miller, University of Illinois Urbana-Champaign

Type of Session: Interactive Workshop

Length of workshop: 60 minutes

Tentative timeline: Intro - 5 min Intro to the NSF RIEF - 10 min Characteristics of successful proposals - 10 min Developing a Mentoring Plan - 10 min Developing a project budget - 10 min Questions and discussion - 15 minutes

W22426 - ELD Extended Executive Committee Meeting

3:30 pm - 5:00 pm
L100A, Convention Center

Extended Executive Committee business meeting

W1520 - ERM: Problem Solving and Conceptual Understanding

3:30 pm - 5:00 pm
201, Convention Center

Moderators: Geoffrey L Herman (Teaching Associate Professor), Diana G. De La Rosa-pohl (Instructional Associate Professor)
W1521 - ERM: Exploring Educational Technology in Engineering

3:30 pm - 5:00 pm
Nicollet A, Hyatt Regency

Moderators: Robin A.M. Hensel (Assistant Dean for Freshman Experience), Emilie Siverling
Speaker: Stephanie Cutler (Assessment and Instructional Support Specialist)

Come learn about how these authors are exploring the impact of technology in the engineering classroom!

Utilization of Automatized Creativity Ratings in Linguistically Diverse Populations: Automated Scores Align with Human Ratings
 Danielle Dickson
 Gul Kremer
 Zahed Siddique (Professor) (University of Oklahoma)
 Elif Elcin Gunay
 Janet Van Hell (Professor of Psychology and Linguistics) (Pennsylvania State University)

Developing a Program to Assist in Qualitative Data Analysis: How Engineering Students’ Discuss Model Types
 Kelsey Joy Rodgers (Engineering Education Researcher)
 Angela Thompson
 Nicholas Hawkins (Assistant Professor) (University of Louisville)
 Matthew A. Verleger (Professor of Engineering Fundamentals)
 Farshid Marbouti (Assistant Professor) (San Jose State University)

WIP: Using Machine Learning to Automate Coding of Student Explanations to Challenging Mechanics Concept Questions
 Harpreet Auby
 Namrata Shivagunde (University of Massachusetts Lowell)
 Anna Rumshisky (University of Massachusetts Lowell)
 Milo Koretsky (McDonnell Family Bridge Professor)

WIP: Role of digital nudging strategies on STEM students’ application engagement
 Ahmed Ashraf Butt
 Saira Anwar (Texas & M, Department of Multidisciplinary Engineering)
 Muhsin Menekse (Associate Professor) (Purdue University at West Lafayette (COE))

A Multi-Year Comparison of Student Performance in an Adaptive and Inverted Classroom Versus a Traditional Learning Environment
 Erik Hurlen

WIP: Instances of Dynamic Pedagogical Decision Making in the Uptake of a Technology Tool
 Harpreet Auby
 John Galisky (University of California, Santa Barbara)
 Susan Bobbitt Nolen (Professor Emerita)
 Milo Koretsky (McDonnell Family Bridge Professor)

W19251 - Engineering Design Graphics Division Technical Session 2

3:30 pm - 5:00 pm
205B, Convention Center

Effects of training program implementation on improvement in spatial ability
 Maxine Fontaine (Teaching Associate Professor) (Stevens Institute of Technology (School of Engineering and Science))
 Lelli Van Den Einde (Dr.) (University of California, San Diego)
 Alexander John De Rosa (Teaching Associate Professor) (Stevens Institute of Technology (School of Engineering and Science))

Isometric Projection as a Threat to Validity in the PSVT:R
 Kristin Bartlett (Indiana University - Purdue University Indianapolis)
 Jorge Dorribo Camba (Associate Professor)

Student Retention in an Engineering Technology Program: The Role of Spatial Visualization Ability
 Theodore J. Branoff (Chair-Department of Technology)
 Jaby Mohammed (Assistant Professor) (Illinois State University)

W265 - Special Lecture by Wilfred Reilly

3:30 pm - 5:00 pm
102D, Convention Center

Wilfred Reilly is a public intellectual and a political scientist at an HBCU institution, Kentucky State University. His
in-depth quantitative studies of wide-ranging social and political phenomena have gained national and international prominence over the recent years. In this Special Event - Distinguished Lecture organized by the Technological and Engineering Literacy - Philosophy of Engineering Division (TELPhE), we seek to explore some of the key lessons of Dr. Reilly’s scholarship, specifically lessons to be learned from various studies on narratives versus science on root causes of disparities across race, gender, and class lines. We also delve into some of the underlying precepts that shape the discourse of educational and occupational policy making under the umbrella of DEI. We also seek to examine the cultural and political forces contributing to the formation of (1) differential achievements in different social groups, (2) widely accepted and disseminated ideas about these issues, and (3) how we as engineering educators can help inform ourselves and serve the profession in a science-based and informed manner.

**W2682 - Environmental Engineering Division Technical Session 4**

**3:30 pm - 5:00 pm**

209, Convention Center

**Moderator:** Alexa Rihana Abdallah (Professor) (University of Detroit Mercy)

**Speakers:** Joshua Richard Wyrick (York College of Pennsylvania), Gerald Sullivan (Professor) (Virginia Military Institute), Ari Sherris (Associate Professor), Hua Li (Professor) (Texas A&M University - Kingsville), Ning Zhang (Associate Professor of Environmental Engineering)

The 4th and final technical session for the Environmental Engineering Division with the following talks: 1. From Oceanic Plastics Pollution to Building Blocks: A Two-Semester Project Spanning Statics and Solid Mechanics 2. Piloting Transdisciplinarity among Faculty and Students Concerned with Flood Management on the South Texas Gulf Coast: A Four-stage Model for Initial Collaboration 3. Impact of Hydraulic Fracturing Induced Landscaping Change on Regional Surface Water Quality in Eastern Ohio 4. [WORK IN PROGRESS] Interdisciplinary and Collaborative Approach to Integrating Stream Studies into Campus Curricula

**From Oceanic Plastics Pollution to Building Blocks: A Two-Semester Project Spanning Statics and Solid Mechanics**

Gerald Sullivan (Professor) (Virginia Military Institute)

**Piloting transdisciplinarity among faculty and students concerned with flood management on the South Texas Gulf Coast: A four-stage model for initial collaboration**

Ari Sherris (Associate Professor)

Hua Li (Professor) (Texas A&M University - Kingsville)

David Ramirez

Tushar Sinha (Associate Professor) (Texas A&M University - Kingsville)

Francisco Haces Haces Fernandez (Texas A&M University - Kingsville)

Christine Reiser Robbins (Associate Professor of Anthropology) (Texas A&M University - Kingsville)

Marisol Pirozzolo (Texas A&M University - Kingsville)

Mohammad Omar Azayzeh (Texas A&M University - Kingsville)

Alberto Anthony Aguirre (student) (Texas A&M University - Kingsville)

Danielle Maynard (Texas A&M University - Kingsville)

Yara Green-Jordan (Texas A&M University - Kingsville)

Mariee Fernanda Cruz Mendoza (Texas A&M University - Kingsville)

**Impact of hydraulic fracturing induced landscaping change on regional surface water quality in eastern Ohio**

Ning Zhang (Associate Professor of Environmental Engineering)

Krishnakumar V. Nedunuri (Professor of Environmental Engineering) (Central State University)

Xiaofang Wei

Ramanitharan Kandiah (Dr) (Central State University)

**A Foundational Design Experience in Conservation Technology: A Multi-Disciplinary Approach to meeting Sustainable Development Goals**

Andrew Schulz

Anika Elizabeth Patka (Georgia Institute of Technology)

Cassandra Shriver

Benjamin Seleb (Georgia Institute of Technology)

Margaret Zhang (Georgia Institute of Technology)

Nima Jadali (Georgia Institute of Technology)

Caroline Doughton Greiner

David Hu (Professor) (Georgia Institute of Technology)

Roxanne Moore
[WORK IN PROGRESS] Interdisciplinary and collaborative approach to integrating stream studies into campus curricula

Joshua Richard Wyrick (York College of Pennsylvania)
Alison Rose Kennicutt (York College of Pennsylvania)
Bridgette Hagerty (York College of Pennsylvania)
JESSICA NOLAN (Associate Professor, Biology)
Karl Kleiner (Associate Professor) (York College of Pennsylvania)
Most Tahera Naznin (York College of Pennsylvania)

W271 - Juntos pero no revueltos: Continuing the Conversation
3:30 pm - 5:00 pm
Minnehaha, Hyatt Regency

W28105 - First-Year Programs Division: Conference Wrap Up
3:30 pm - 5:00 pm
202, Convention Center

A Cultural Approach to Teaching Teamwork in Undergraduate Engineering Courses
Joanna G Burchfield
Olukemi Akintewe
Jamie Chilton (Assistant Professor of Instruction)

Investigating student and faculty perceptions of a new assessment system for Project-Based Learning
Yi Cao
Jennifer M Case (Chair, Engineering Education) (Virginia Polytechnic Institute and State University)
Jingshen Wu (Professor)

Pushing the Boundaries of Interdisciplinary Collaboration
Megan Kenny Feister (Assistant Professor)
Nandini Sharma (University of Texas at Austin)

W35231 - LEES 5: Preparing and Practicing Culturally and Ethically Sensitive Engagement
3:30 pm - 5:00 pm
200F, Convention Center

Real Engineering: Space – Experiential, Community Engaged and Sustainable Learning in Space Engineering
Franz Thomas Newland (Associate Professor) (York University)
Raghad El-Shebiny
Olivia Doreen Alsop

Reflecting on Culture in an Immersion Experience: How to Prepare Students for the Unexpected
Laura Kasson Fiss (Research Assistant Professor) (Michigan Technological University)
Darnisha L Slade (Michigan Technological University)

Complexities in Alaskan Housing: Critical reflections on social forces shaping cold climate building projects
Todd Nicewonger
Stacey Anne Fritz (Project Manager)
W42162 - Multidisciplinary Engineering Division Technical Session - Machine Learning, IoT, Writing Center Peer Tutors, Conceptual Modeling

3:30 pm - 5:00 pm
205D, Convention Center

Moderators: Mehrube Mehrubeoglu (Professor) (Texas A&M University - Corpus Christi), Lynn A. Albers (Assistant Professor)

Using Writing Center Peer Tutors as a Means to Improve Mechanical Engineering Technology Student Writing

David Clippinger
Ruth Camille Pflueger (Director) (Pennsylvania State University, Behrend College)
Steven Nozaki (Associate Teaching Professor)

Work-in-Progress: Understanding learners’ motivation through machine learning analysis on reflection writing

Elizabeth Pluskwik (Business Faculty) (Minnesota State University, Mankato)
Yuezhou Wang (Associate Professor)
Lauren Singelmann

Work-in-Progress: Role of Conceptual Modeling in the Students’ Ability to Solve Word Problems

Lizzie Santiago
Anika Pirkey

Work-in-Progress: Developing an IoT-based Engaged Student Learning Environment and Tools for Engineering and Computer Science Programs

Mehrube Mehrubeoglu (Professor) (Texas A&M University - Corpus Christi)
Lifford Mclauchlan (Associate Professor and Assistant Chair)
David Hicks
G. Beate Zimmer (Associate Professor) (Texas A&M University - Corpus Christi)

W55252 - Engineering Ethics Division: Approaches to Ethics Education (Part 3, Nature and Environment)

3:30 pm - 5:00 pm
200C, Convention Center

Moderators: Jennifer A Turns (Professor), Niloofar Kamran (Dr.)

Teaching Engineering for Human Rights: Lessons Learned from a case study-based undergraduate class

Davis Chacon-hurtado
Sandra Sirota (Assistant Professor in Residence) (University of Connecticut)
Shareen Hertel (Dr.) (University of Connecticut)

Evaluating Engineering Students’ Moral Sensitivity in a Natural Disaster Context

Sara Delaney Barrens (University of Texas at Austin)
Kyudong Kim (University of Texas at Austin)
Michaela Leigh Lapatin (University of Texas at Austin)
Kate Padgett Walsh (Associate Professor) (Iowa State University of Science and Technology)
Cassandra Rutherford
Luan Minh Nguyen (Mr.) (Iowa State University of Science and Technology)
Kasey M. Faust (Assistant Professor) (University of Texas at Austin)

Polluting the Pristine: Using Mount Everest to Teach Environmental Ethics

Marilyn Dyrud

W75596 - ASEE New Program Chairs Orientation - Will Be Held Virtually After the Conference

3:30 pm - 5:00 pm
None, To be Held Virtually after the Conference

This session will be held virtually in July. An invitation and link will be sent directly to program chairs. We encourage Program Chairs to attend the ASEE Member Feedback Sessions held Monday - Wednesday
W75660 - Engineering Culture Roundtable
3:30 pm - 5:00 pm
Ballroom B, Convention Center

In the broad fields of engineering, do our attitudes and behavioral characteristics--our culture--best serve our core mission in engineering to solve problems for our world and for our society? In addition, do the practices and skills we develop in our students place greater importance on some information and lesser importance on others? Given the changing forces influencing our world and our society, should we revisit these practices and skills valuing and utilizing information? Should we revisit the design and optimization processes we follow so that our engineered solutions provide sustainable solutions? Roundtables will be facilitated to explore Strengths, Opportunities, Aspirations, and Results (SOAR) of our engineering culture. Ray McDermott noted in 2006, “Culture is not a past cause to a current self. Culture is the current challenge to possible future selves.” Join these roundtable discussions to participate in defining our future selves.

W7125 - Civil Engineering Division - Huh? What Did You Say? What Does That Mean?
3:30 pm - 5:00 pm
200E, Convention Center
Moderators: David Saftner, Tonya Lynn Nilsson (Senior Lecturer)

Practicing engineers need a series of skills beyond engineering calculations. They must effectively communicate with colleagues, agencies, clients and the general public; be life-long learners; and have a solid understanding of data science. This session offers effective ways to develop and improve these skills in engineering students.

Writing and Engineering – Perfect Together
Lynn Mayo (CEO) (RePIcture)
Katie Wheaton

Training for Life: Reimagining a Codes and Regulations Course
Michelle Marincel Payne (Associate Professor) (Rose-Hulman Institute of Technology)
Namita Shrestha (Lecturer) (Rose-Hulman Institute of Technology)

Redesigning Writing Instruction Within a Lab-Based Civil Engineering Course: Reporting on the Evolution Across Several Semesters
Mia Renna (University of Illinois at Urbana - Champaign)
Rebecca Avgoustopoulos (University of Illinois at Urbana - Champaign)
Ryan Ware
Karthik Pattajje Sooryanarayana (University of Illinois at Urbana - Champaign)
John Popovics
Julie L. Zilles (Research Assistant Professor) (University of Illinois at Urbana - Champaign)

Work in Progress: The Strategic Importance of Data Science in Civil Engineering: Encouraging Interest in the Next Generation
Cristina Torres-Machi (Assistant Professor)
Angela R Bielefeldt (Professor)
Qin Lv (Professor) (University of Colorado Boulder)

Integrating Technical Communication Block in a Computer Applications Course: Lessons Learned
Joel Sloan (Permanent Professor and Head) (United States Air Force Academy)
Karin Becker  
Timothy Frank (Assistant Professor) (United States Air Force Academy)

**W84302 - Engineering Physics and Physics Division Business**

3:30 pm - 5:00 pm  
M100FG, Convention Center

**W675762 - ASEE Program Chair Appreciation Happy Hour (By Invite Only)**

4:00 pm - 5:00 pm  
Seasons, Convention Center

A heartfelt thank you to our Program Chairs for their dedication and commitment to our organization and our Annual Conference

**W775636 - ASEE President Farewell Reception & International Day Poster Presentations, Sponsored by Dassault Systemes**

6:00 pm - 7:30 pm  
Ballroom A, Convention Center

*Moderator: Adrienne Minerick*

*Speakers: Doug Tougaw (Dean of Engineering), Jenna P. Carpenter (Dean of Engineering) (Campbell University)*

Join your friends and colleagues as we say farewell to President Adrienne Minerick and welcome incoming President Jenna Carpenter as we look forward to Baltimore, Maryland, site of the 2023 Annual Conference & Exposition. This session will also feature the Poster Board Presentations from the Global Forum.

**W75638 - ASEE President-Elect Jenna Carpenter; Friends and Family Reception (By Invite Only)**

7:30 pm - 9:00 pm  
Northwoods, Hyatt Regency

BY INVITATION ONLY Friends and Family Reception hosted by President-Elect Jenna Carpenter
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