



ASEE 2022 ANNUAL CONFERENCE

# Excellence Through DIVERSITY

JUNE 26 — 29, 2022 | MINNEAPOLIS, MN



Scan to view full  
PDF program

CONFERENCE HIGHLIGHTS

# 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**



**Breakfast will be served.**  
**Space is limited.**  
**Scan to RSVP today!**

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!



Trusted engineering content with new site updates that optimize learning and teaching

[Accessengineeringlibrary.com](https://Accessengineeringlibrary.com)

**Wednesday, June 29, 2022**  
**8:00aAM – 9:30AM | Room 101B**

**Panel Discussion: What eResources would help your students learn mechanics?**



**Breakfast will be served.**  
**Space is limited.**  
**Scan to RSVP today!**

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



**connect**<sup>®</sup>

Find out how to improve student results with adaptive-learning tools

[mheducation.com/highered/engineering-computer-science](https://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»**

# 2022 ASEE ANNUAL CONFERENCE PRESIDENT'S WELCOME



## BACK TOGETHER & UNITED FOR CHANGE

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, re-connecting 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,*

A handwritten signature in black ink that reads "Adrienne Minerick".

**Adrienne Minerick**  
**ASEE President 2021-2022**

# 2022 ASEE ANNUAL CONFERENCE

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# IOWA STATE UNIVERSITY

## College of Engineering

Visit us in booth 627



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](http://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  
Professor of Chemical and Biochemical  
Engineering  
*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*



# 2022 ASEE ANNUAL CONFERENCE BOARD OF DIRECTORS



## **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**

**SUNDAY, JUNE 26**

**7:00 A.M.**

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

**8:00 A.M.**

9:00 A.M.

**10:00 A.M.**

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

**11:00 A.M.**

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

Sunday Workshops  
9:00 A.M. – Noon

**12:00 P.M.**

FREE TIME  
Noon - 1:15 P.M.

**1:00 P.M.**

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

**2:00 P.M.**

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

**3:00 P.M.**

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

**4:00 P.M.**

ASEE General  
Body,  
Financial  
Town Hall  
and ASEE 101  
Session  
3:00 P.M. –  
4:30 P.M.

PIC I-V  
Chairs  
Meeting  
3:00 P.M. –  
4:30 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.

**5:00 P.M.**

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

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

**6:00 P.M.**

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



# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE-AT-A-GLANCE

### MONDAY, JUNE 27

Registration Open - 7:00 A.M. - 5:00 P.M.

Exhibit Hall Open - 5:00 P.M. - 6:30 P.M.

Monday Plenary  
8:00 A.M. - 9:30 A.M.

Technical Sessions & Business Meetings  
9:45 A.M. - 11:15 A.M.

Technical Sessions & Business Meetings  
11:30 A.M. - 1:00 P.M.

FREE TIME  
1:00 P.M. - 1:45 P.M.

Technical Sessions & Business Meetings  
1:45 P.M. - 3:15 P.M.

Technical Sessions  
& Business  
Meetings  
3:30 P.M. -  
5:00 P.M.

Interdivisional  
Town Hall  
3:30 P.M. - 5:00  
P.M.

Focus on Exhibits Welcome Reception &  
Best Paper Nominee Poster Session  
5:00 P.M. - 6:30 P.M.

Division Social Events (Optional)

### 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.

Technical  
Sessions &  
Business  
Meetings  
8:00 A.M. -  
9:30 A.M.

ASEE  
Fellows  
Breakfast  
8:00 A.M. -  
9:30 A.M.

CMC  
Industry  
Day  
Breakfast  
8:00 A.M. -  
9:30 A.M.

Focus on Exhibits Networking Break &  
ASEE Division Poster Sessions  
9:45 A.M. - 11:15 A.M.

Tuesday Plenary  
11:30 A.M. - 1:00 P.M.

FREE TIME  
1:00 P.M. - 1:45 P.M.

Technical Sessions  
& Business  
Meetings  
1:45 P.M. - 3:15  
P.M.

CMC Industry Day  
Session  
1:45 P.M. - 3:15  
P.M.

Technical Sessions  
& Business  
Meetings  
3:30 P.M. -  
5:00 P.M.

CMC Industry Day  
Session  
3:30 P.M. -  
5:00 P.M.

Focus on Exhibits Summertime Social  
5:15 P.M. - 6:15 P.M.

Division Social  
Events (Optional)

Institutional Council  
Reception  
(by invitation only)  
7:00 P.M. to 8:30 P.M.

### 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.

Technical Sessions  
& Business  
Meetings  
8:00 A.M. -  
9:30 A.M.

2022/2023 ASEE  
Board of Directors  
Meeting  
7:00 A.M. -  
9:30 A.M.

Focus on Exhibits Networking Break &  
NSF Grantees Poster Session  
9:45 A.M. - 11:15 A.M.

Technical Sessions  
& Business  
Meetings  
11:30 A.M. -  
1:00 P.M.

ASEE Awards Lunch  
11:30 A.M. - 1:00 P.M.

FREE TIME  
1:00 P.M. - 1:45 P.M.

Distinguished Lecture Series  
1:45 P.M. - 3:15 P.M.

Technical Sessions & Business Meetings  
3:30 P.M. - 5:00 P.M.

President's Farewell Reception  
6:00 P.M. - 7:30 P.M.

# ASEE LIVING WALL 2022



## 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:



@ASEEHQ



@ASEE\_DC

## Hotel INFORMATION

Hotel	Blocks
Hyatt Regency Minneapolis Headquarters Hotel	1
Hilton Minneapolis	2
Millennium Minneapolis	1
Holiday Inn Express & Suites Minneapolis - Dtnw (Conv Ctr), an IHG Hotel	1
Hilton Garden Inn Minneapolis Downtown	2
Doubletree Suites by Hilton Hotel Minneapolis	3
Best Western Plus The Normandy Inn & Suites	5
The Marquette Hotel, Curio Collection by Hilton	7

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](mailto: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.

# 2022 ASEE ANNUAL CONFERENCE

## LIST OF EXHIBITORS

ALL SESSIONS ARE CENTRAL TIME (CT)

EXHIBITOR	BOOTH #
ABET	833
Afinia 3D	1226
Altair Engineering	1314
Amatrol, Inc.	1227
American Society of Civil Engineers	1233
American Welding Society	737
ANSYS, Inc.	415
Arizona State University	1037
Armfield Incorporated	1126
ASEE Faculty Teaching Excellence (FTE) Task Force	936
ASTM International	520
Begell House Inc.	1129
CATME	1045, 1043
Certiport	840
Christian Engineering Society	532
Colorado School of Mines	934
Conference for Industry and Education Collaboration (CIEC)	517
DAC Worldwide, LLC	1229
Dassault Systemes	727
Digilent, Inc.	1228
Edge Impulse	632
Educational Testing Service (ETS)	945
eGrove Education	1133
Elsevier	620
Florida International University	1036
George Mason University	841
Gradescope by Turnitin	834
Hexagon	628
ICE Publishing	1332
IEEE Xplore Digital Library	1027
IET Inspec	940
Interstride	935
Iowa State University of Science and Technology	627
Iron Range Engineering - Minnesota North	633
IUPUI SAE	844
Kennesaw State University	1215
Keysight Technologies	1115
LAB Midwest	1232
Liaison International	823
MathWorks	615

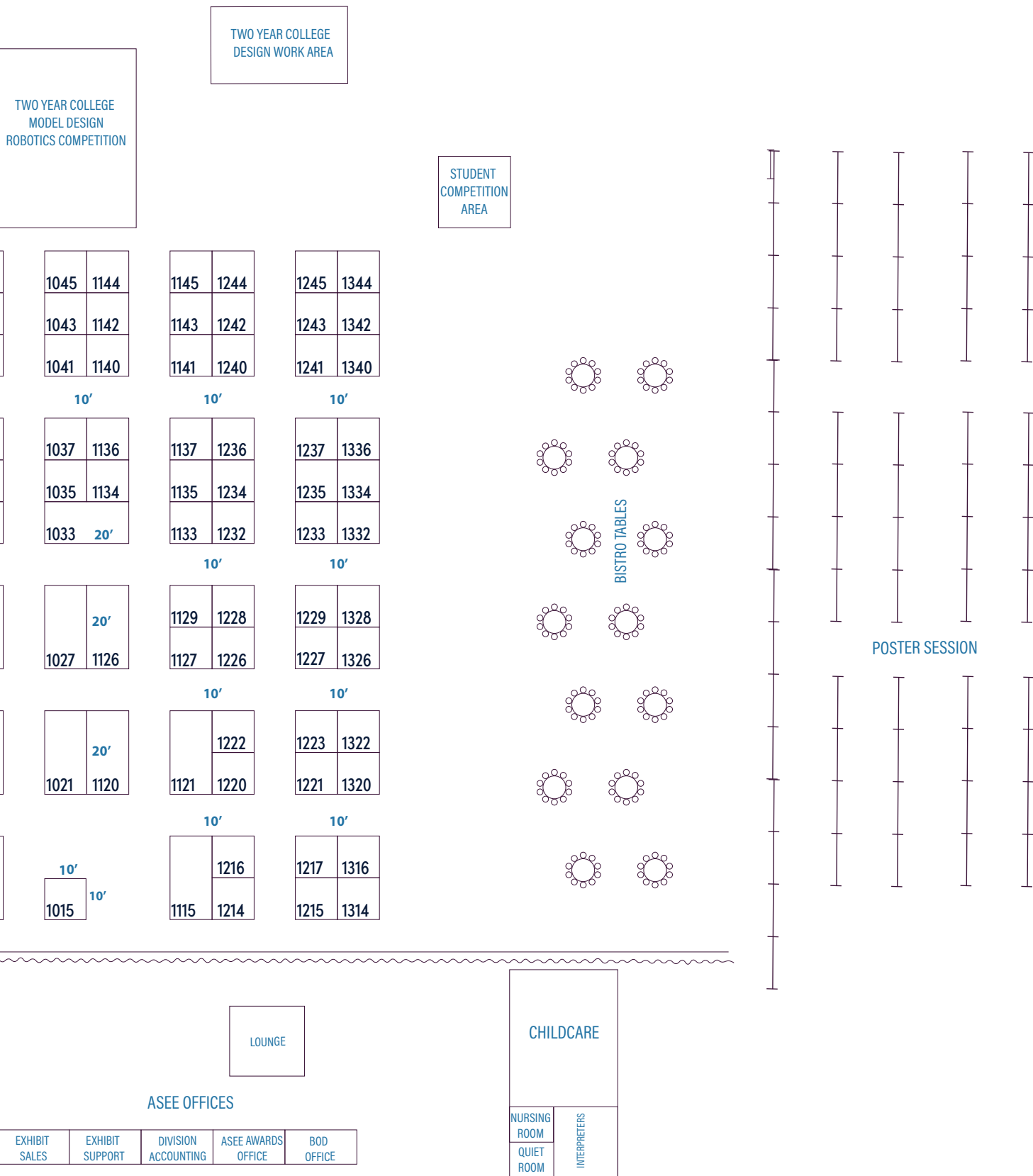
EXHIBITOR	BOOTH #
McGraw Hill	726
MIDFIELD	1045, 1043
NASA EPSCoR	836
National Council of Examiners for Engineers & Surveying	1021
National Science Foundation	733
National Science Foundation ATE Centers	942
North Carolina State University at Raleigh	715
Northwestern University Master of Science in Law Program	1040
Overleaf	937
PASCO scientific	1121
Pearson Education	516
PPI (a Kaplan Company)	835
Purdue Polytechnic Graduate Programs	1044, 1042
Purdue University at West Lafayette (COE)	927
Quality Measures	1120
Rohde & Schwarz USA, Inc.	626
Rubin Education	515
SAE International	514
Scholarly Publications Committee	921
Siemens Digital Industries Software	736
SMC Corporation of America	621
SolidProfessor	521
STMicroelectronics, Inc.	1127
Tecquipment	837
Texas A&M University	721
Texas A&M University at Qatar	829
The Ohio State University	1035
University of Cincinnati	1033
University of Florida	720
University of Illinois at Urbana - Champaign	941
University of Maryland College Park	915
University of Michigan	1041
Utah State University - Engineering Education	1034
Virginia Polytechnic Institute and State University	933
Visit Baltimore	1015
Wiley	614
ZEISS Industrial Quality Solutions	1214



# 2022 ASEE ANNUAL CONFERENCE FLOOR PLAN

ALL SESSIONS ARE CENTRAL TIME (CT)







# 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](https://www.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](http://WWW.ASEE.ORG/CONFERENCE-PLANNER)

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

ALL SESSIONS ARE CENTRAL TIME (CT)

### 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!

### Taste of Minneapolis

## Convention Center Plaza

**Sunday, June 26  
6:00 pm – 8:30 pm**

#### Featuring:

- Music provided by the Madison Sound DJ's
- Caricature artists
- Henna tattoo artists
- Mobile memories interactive photobooth
- Lawn games

#### Local Beer & Wine

- Carlos Creek Winery
- Finnegan's Brew Co.
- Grain Belt Premium
- Summit Brewery
- Surly Furious Brewing Co.



#### Food Items

- Asparagus-smoked turkey canapes
- Baked amablu tartlets
- Beer brat sliders
- Buffalo salami skewers
- Cheese curds
- Cinnamon-sugared lefse roll ups
- Four cheese filo tartlets
- Lemon-blueberry bundt cakes
- Lucy bites
- Midwest wontons
- Petite northern harvest salads
- Petite s'mores entremets
- Petite tater tot hotdishes
- Snicker salads
- Spam sliders
- Strawberry-rhubarb shooters
- Swedish meatballs
- Walleye cakes
- Wild rice mushroom tartlets

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

ALL SESSIONS ARE CENTRAL TIME (CT)

### 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





# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### 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 Rossmann, *Lafayette College*

Prof. Mary A. Armstrong, *Lafayette College*

##### 2021 Best Zone I and Best Overall Zone Paper Winner

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### **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

### **• 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

## 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.

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### • Student Project Showcase and Poster Session

Exhibit Hall A, Minneapolis Convention Center

1:00 p.m. to 4:00 p.m.

New this year! Students from high school through graduate school will share their research, creative engineering designs, and maker-space projects in this special Exhibit Hall event.

## DISTINGUISHED LECTURES

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

### • 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.

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.

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### • 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**



# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### 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 LGBTQ 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

# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

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**

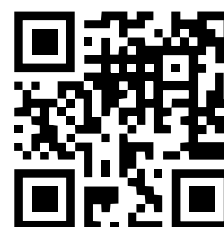
Dr. Antonette T. Cummings P.E., *University of Wisconsin-Platteville*

**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



# 2022 ASEE ANNUAL CONFERENCE

## CONFERENCE HIGHLIGHTS

### • **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*



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RETIRED	\$40
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STUDENT ONLINE	\$10 (outside of the USA, dues are based on World Bank Country Classification)

\* Between and including June 26-29, 2022; use promo code ASEE2022

\*\* The discount does not apply to division dues or publication subscriptions.

# 2022 ASEE ANNUAL CONFERENCE

## DIVERSITY, EQUITY, AND INCLUSION SESSIONS

### 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



# 2022 ASEE ANNUAL CONFERENCE

## DIVERSITY, EQUITY, AND INCLUSION SESSIONS

- **DISTINGUISHED LECTURE:**  
**Meditations on the Words of a Black King: The Wicked Problem of Shallow Understanding**

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**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:**

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**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 p.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.

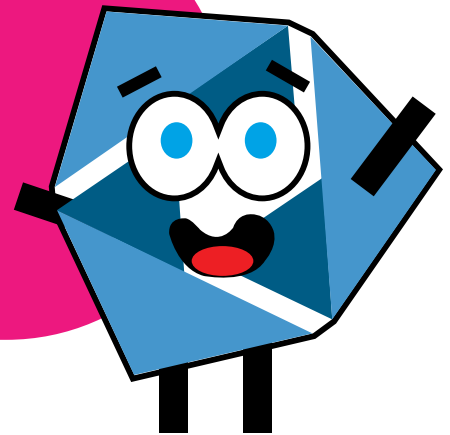
**Tuesday, June 28, 5:15 p.m. to 6:15 p.m.**

**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**

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**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**

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**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

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# 2022 ASEE ANNUAL CONFERENCE

## ABET SESSIONS

### • 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**

# 2022 ASEE ANNUAL CONFERENCE

## ENGINEERING CULTURE ROUNDTABLES

### • Engineering Culture Roundtables

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**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.



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ASEE would like to thank  
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for her contributions as  
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# 2022 ASEE ANNUAL CONFERENCE

## SPONSOR TECHNICAL SESSIONS

### • 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

# 2022 ASEE ANNUAL CONFERENCE

## SPONSOR TECHNICAL SESSIONS

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.



# 2022 ASEE ANNUAL CONFERENCE

## SPONSOR TECHNICAL SESSIONS

### • 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.**

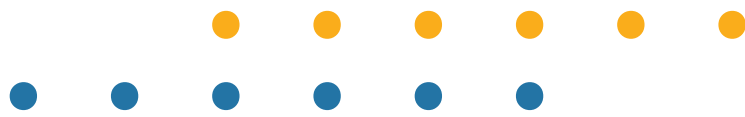
**Room 101B, Minneapolis Convention Center**

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](https://info.mheducation.com/McGraw_Hill_Breakfast_ASEE_RSVP.html)



# ASEE MERCHANDISE

**Graphic T-shirt**



**\$20**

**U: S M L XL  
2XL**

**125 White Polo**



**\$20**

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**ASEE Baby Bib**



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**Poncho**



**\$5**

**Umbrella**



**\$10**

**Pen Set**



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Cable**



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2 Ports**



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## AT THE ASEE STORE

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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



# 2022 ASEE ANNUAL CONFERENCE 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.**

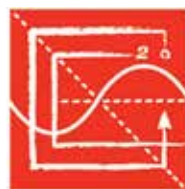
**Seasons, Minneapolis Convention Center**

Social event for the Corporate Member Council, Engineering Research Council, Engineering Technology Council, and Engineering Deans Council



## PREMIER CORPORATE PARTNERS:

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.



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For more information, please visit [www.asee.org](http://www.asee.org) or contact **Ashley Krawiec**, Manager of Event Sales, at **202-649-3838** or [a.krawiec@asee.org](mailto:a.krawiec@asee.org)

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Thank you for your commitment to furthering excellence in engineering and engineering technology education.

## Co-Hosts

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# IOWA STATE UNIVERSITY

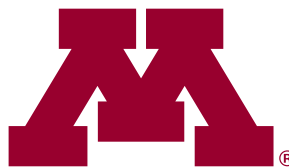
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Thank you for your commitment to furthering excellence in engineering and engineering technology education.

## Innovator

IOWA STATE UNIVERSITY  
College of Engineering



## Pioneer



## Mentor



## Leader



# 2022 ASEE ANNUAL CONFERENCE

## REGISTRATION INFORMATION AND FEES

### Included in Your Registration:

Rate	Early (05/17)	Regular (5/18 - 06/24)	On-site (06/24 - 06/30)
Member	US \$725	US \$825	US \$925
Non-Member	US \$975	US \$1075	US \$1175
Life Member	US \$125	US \$125	US \$125
Retiree Member	US \$225	US \$225	US \$225
Student Member	Free	Free	Free
Student Non-Member	US \$50	US \$50	US \$50
*K-12 Teacher	US \$250	US \$250	US \$250
**Industry Day	US \$325	US \$325	US \$325
Guest	US \$225	US \$225	US \$225

	Program Orientations	Business Meetings	Exhibits and Sponsor Demos	Plenaries	Technical Sessions	Distinguished Lectures
Member/Non-Member Full Registration	✓	✓	✓	✓	✓	✓
Student	✓	✓	✓	✓	✓	✓
Student Non-Member	✓	✓	✓	✓	✓	✓
Life Member	✓	✓	✓	✓	✓	✓
Retiree Member	✓	✓	✓	✓	✓	✓
*K-12 Teacher	✓	✓	✓	✓	✓	✓
Guest	✓		✓	✓		✓

### 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](mailto: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](mailto: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](mailto:conferences@asee.org).

# 2022 ASEE ANNUAL CONFERENCE

## 2022 ASEE PROGRAM CHAIRS

ASEE would like to acknowledge and thank the 2022 ASEE Program Chairs for their tireless efforts and dedication to our organization.

Division	Program Chair Name	Program Chair Organization
<b>Aerospace Division</b>	Tracy L. Yother	Purdue University at West Lafayette
<b>Architectural Engineering Division</b>	Rachel Mosier	Oklahoma State University
<b>Biological &amp; Agricultural Division</b>	Youngmi Kim	University of Wisconsin–River Falls
<b>Biomedical Division</b>	Tanya M. Nocera	Ohio State University
<b>Chemical Engineering Division</b>	Jacqueline Gartner	Campbell University
<b>Civil Engineering Division</b>	Tonya Lynn Nilsson	Santa Clara University
<b>College Industry Partnerships Division</b>	Charles E. Baukal Jr.	John Zink Hamworthy Combustion
<b>Community Engagement Division</b>	Simon Thomas Ghanat	The Citadel
<b>Computers in Education Division</b>	Steven F. Barrett	University of Wyoming
<b>Computing &amp; Information Technology Division</b>	Mudasser Fraz Wyne	National University
<b>Construction Division</b>	Nicholas Tymvios	Bucknell University
<b>Continuing Professional Development Division</b>	Kerri Poppler James	University of Maryland College Park
<b>Cooperative &amp; Experiential Education Division</b>	Katherine McConnell	University of Colorado Boulder
<b>Design in Engineering Education Division</b>	Corey T. Schimpf	University at Buffalo, The State University of New York
<b>Educational Research and Methods Division</b>	Stephanie Cutler	Pennsylvania State University
<b>Electrical and Computer Division</b>	Amardeep Kaur	Southern Illinois University Edwardsville
<b>Energy Conversion, Conservation, and Nuclear Engineering Division</b>	Matt Aldeman	Illinois State University
<b>Engineering and Public Policy Division</b>	Elizabeth Cady	National Academy of Engineering
<b>Engineering Design Graphics Division</b>	Abayomi Joseph Ajayi-Majebi	Central State University
<b>Engineering Economy Division</b>	Katie Leanne Basinger	University of Florida
<b>Engineering Ethics Division</b>	Alison J. Kerr	Purdue University at West Lafayette
<b>Engineering Leadership Development Division</b>	Cindy Rottmann	University of Toronto
<b>Engineering Libraries Division</b>	Daniela Solomon	Case Western Reserve University
<b>Engineering Management Division</b>	Jena Shafai Asgarpour	University of Nebraska–Lincoln
<b>Engineering Physics and Physics Division</b>	Robert A. Ross	University of Detroit Mercy
<b>Engineering Technology Division</b>	Amitabha (Amit) Bandyopadhyay	State University of New York, College of Technology at Farmingdale
<b>Entrepreneurship &amp; Engineering Innovation Division</b>	Sandra Furnbach Clavijo PE	Stevens Institute of Technology
<b>Environmental Engineering Division</b>	David V.P. Sanchez	University of Pittsburgh



# 2022 ASEE ANNUAL CONFERENCE

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Division	Program Chair Name	Program Chair Organization
<b>Equity, Culture &amp; Social Justice in Education Division</b>	Stephanie Masta	Purdue University at West Lafayette
<b>Experimentation &amp; Lab-Oriented Studies Division</b>	Robby Sanders	Tennessee Technological University
<b>Faculty Development Division</b>	Homero Murzi	Virginia Polytechnic Institute and State University
<b>First-Year Programs Division</b>	Krista M. Kecskemety	Ohio State University
<b>Graduate Studies Division</b>	Diane L. Peters	Kettering University
<b>Industrial Division</b>	Lisa Bosman	Purdue University at West Lafayette
<b>Instrumentation Division</b>	Herbert L. Hess	University of Idaho
<b>International Division</b>	Sylvia Jons	Institute of International Education
<b>Liberal Education/Engineering &amp; Society Division</b>	Sean Ferguson	University of Virginia
<b>Manufacturing Division</b>	Aditya Akundi	University of Texas Rio Grande Valley
<b>Mathematics Division</b>	Eliza Gallagher	Clemson University
<b>Mechanical Engineering Division</b>	Anna K.T. Howard	North Carolina State University at Raleigh
<b>Mechanics Division</b>	Phillip Cornwell	Rose-Hulman Institute of Technology
<b>Military and Veterans Division</b>	Alyson Grace Eggleston	The Citadel
<b>Minorities in Engineering Division</b>	Kristin Imhoff	Saint Joseph's University
<b>Multidisciplinary Engineering Division</b>	Lynn A. Albers	Hofstra University
<b>New Engineering Educators Division</b>	Ashish D. Borgaonkar	New Jersey Institute of Technology
<b>Ocean and Marine Division</b>	Robert Kidd	State University of New York Maritime College
<b>Pre-College Engineering Education Division</b>	Manuel Alejandro Figueroa	The College of New Jersey
<b>Software Engineering Division</b>	Afsaneh Minaie	Utah Valley University
<b>Student Division</b>	Yashin Brijmohan	University of Nebraska–Lincoln
<b>Systems Engineering Division</b>	Benjamin Kwasa	University of Missouri–Columbia
<b>Technological and Engineering Literacy/Philosophy of Engineering Division</b>	Soheil Fatehiboroujeni	Cornell University
<b>Two-Year College Division</b>	Philip J. Regalbuto	Trident Technical College
<b>Women in Engineering Division</b>	Kristi J. Shryock	Texas A&M University

# Tips for Inclusive Networking During the COVID Pandemic

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."

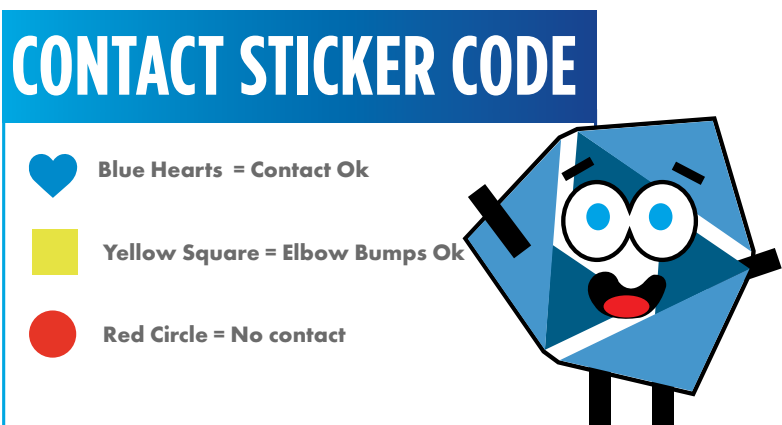
- Use this shared language if you struggle with determining how to respond to an uncomfortable request for a handshake, dinner invitation, etc.
- On the other hand, if someone uses this expression, there is no need to cajole them if their boundaries prevent them from further engagement.

## 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.



# 2022 ASEE ANNUAL CONFERENCE MINNEAPOLIS CONVENTION CENTER FLOOR PLANS

## LEVEL 1



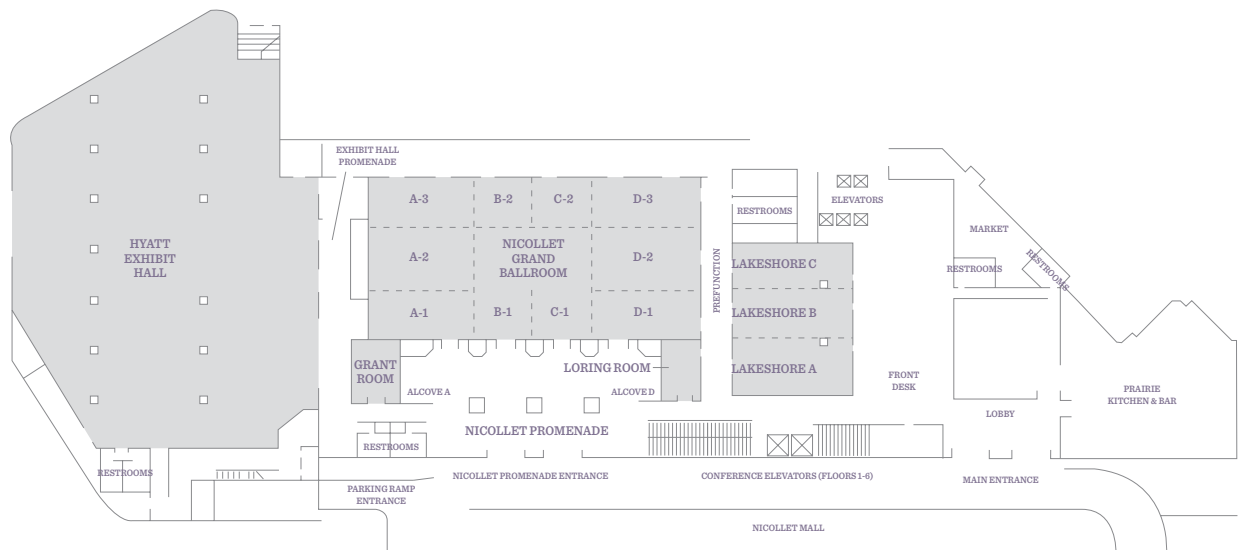
## LEVEL 2



2022 ASEE ANNUAL CONFERENCE

HYATT REGENCY MINNEAPOLIS FLOOR PLANS

MAIN LEVEL MEETING ROOMS



SECOND LEVEL MEETING ROOMS



2022 ASEE ANNUAL CONFERENCE  
FUTURE ASEE ANNUAL CONFERENCES

**2023**

**June 25 – 28**

**BALTIMORE,  
MARYLAND**

**2024**

**June 23 – 26**

**PORTLAND,  
OREGON**

**2025**

**June 22 – 25**

**MONTREAL,  
QUEBEC, CANADA**

**2026**

**June 21 – 24**

**CHARLOTTE,  
NORTH CAROLINA**



# GLOBAL ENGINEERING EDUCATION INNOVATION



## TEXAS A&M UNIVERSITY Engineering

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)*

## INSTITUTE FOR ENGINEERING EDUCATION & INNOVATION

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 Experiment Station



## TEXAS A&M UNIVERSITY at QATAR

- 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

[engineering.tamu.edu](http://engineering.tamu.edu)

[ieei.tamu.edu](http://ieei.tamu.edu)

[www.qatar.tamu.edu](http://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

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 Kemnitzner (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.

## 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.

## U2500 - SUNDAY WORKSHOP: Workshop on Pico/Nano/Micro- Satellite Engineering: Life Cycle of a PNMSat Mission Hands-On Experience Using a Classroom Satellite Kit

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.

## 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.

## 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.

## **U378 - SUNDAY WORKSHOP: Current Developments in Engineering Pedagogy: The New IGIP Prototype Curriculum and Certification for Engineering Educators**

**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 Education 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.

### U84735 - SUNDAY WORKSHOP: Projects-based Arduino/Raspberry Pi Experiential Activities

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

200H, Convention Center

Speakers: Bala Maheswaran (Professor), Carl K. Frederickson (Professor and Chair)

A basic knowledge of Arduinos, Raspberry Pi, or other similar system is essential to any engineering program and engineering project in our ever-evolving electronic world. Engineering and science students are often using these control systems in class activities and projects. This workshop will focus on introducing the Arduino and Raspberry Pi systems as the data-acquisition platform in a freshman engineering physics course and in engineering courses. The workshop will emphasize how these systems can be used in the laboratory portion of the courses, provide an overview of the systems along with hardware necessary to interface with equipment already available in many freshman laboratories, and present several sample projects. Interactive, hands-on activities will demonstrate how to apply the knowledge. Participants will need to bring a laptop with the Arduino IDE installed and use the Arduino sketch software, which is available as a free download at <https://www.arduino.cc/en/Main/Software>.

### 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)

### U742 - SUNDAY WORKSHOP: Curriculum and Course Design for Mechatronics and Robotics Engineering Education

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

205A, Convention Center

Speakers: Carlotta A. Berry (Professor) (Rose-Hulman Institute of Technology), Michael A. Gennert (Professor), Vikram Kapila (Professor) (New York University Tandon School of Engineering), Greg Lewin (Assistant Professor), James A. Mynderse (Lawrence Technological University)

This workshop is motivated by the rapid growth in mechatronics and robotics engineering and, therefore, the need for students with a strong multidisciplinary theoretical

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, Beville 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](http://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)

Campus)

Cynthia B. Paschal (Associate Professor, Associate Dean)

Rebecca A. Atadero (Associate Professor) (Colorado State University)

Sarah Vigmostad

Desen Ozkan

Homero Murzi (Assistant Professor)

Elizabeth Litzler (Director) (University of Washington)

**WIP: ASEE Year of Impact on Racial Equity: P-12 Parents and Guardians Engagement**

Homero Murzi (Assistant Professor)

Katey Shirey (eduKatey STEAM Education)

Malinda S. Zarske (Teaching Professor)

Elizabeth Litzler (Director) (University of Washington)

Jeremi S. London (Associate Professor)

**WIP: ASEE Year of Impact on Racial Equity: Faculty and Administrators Engagement**

Elizabeth Litzler (Director) (University of Washington)

Jeremi S. London (Associate Professor)

Homero Murzi (Assistant Professor)

Jordan Jarrett (Assistant Teaching Professor)

David B. Knight (Associate Professor and Special Assistant to the Dean for Strategic Plan Implementation) (Virginia Polytechnic Institute and State University)

Linda Vanasupa (Professor of Materials Engineering)

**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 Gnanaswar 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



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. Denise 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), 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)

**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

# 2022 ASEE ANNUAL CONFERENCE

## SUNDAY, JUNE 26<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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 Mccue (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)

## **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)

### **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**

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. Parette (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)

## **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)

Samantha Ruth Brunhaver (Assistant Professor)

**The Impact of Faculty's Use of Pedagogical Communication Platforms on Professor-Student Rapport**

Tina Zecher (Evaluation Associate) (Northern Arizona University)

Fethiye Ozis (Assistant Teaching Professor)

**Experiences Of Faculty Mentoring Engineering Transfer Students**

Deniz Nikkhah (University of California, Irvine)

David A. Copp (Assistant Professor of Teaching) (University of California, Irvine)

Kameryn Denaro

Natascha Trellinger Buswell (Assistant Professor of Teaching)

Gregory Diggs-Yang (Assistant Director) (University of California, Irvine)

Hye Rin Lee

Lorenzo Valdevit

Anna-Lena Dicke (University of California, Irvine)

**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

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

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

**101F, Convention Center**

**Moderators:** Laura K Alford (Lecturer and Research Investigator), Koenraad E Gieskes (Interim Director)

### **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)

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)

## **U29149 - Graduate Studies Division Technical Session 4**

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

**200C, Convention Center**

### **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**

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

**213, Convention Center**

**Moderator:** James E. Lewis (Associate Professor)

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**

Jianguo 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)

Sabahattin 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)

Wenjue 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



solutions, and applied their ideas for successful solutions using appropriate instrumentation ideas. Topics include an interesting mix of civil, mechanical, chemical, biological, and electrical engineering topics addressing traffic control, sensing devices that use long range communication, and water quality instrumentation for mosquito abatement.

### **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 Career/Technical Education Classes with Making and Micro-manufacturing**

Osazuwa John Okundaye (Graduate Researcher)

Qing Li

Shaoping Qiu (Postdoc) (Texas A&M University)

Malini Natarajathinam (Associate Professor)

Sharon Lynn Chu (University of Florida)

Mathew Kuttolamadam (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 Alaqra

Bugrahan Yalvac (Associate Professor) (Texas A&M University)

Michael Johnson (Professor)

Jennifer Whitfield (Instructional Associate Professor) (Texas A&M University)

Jay Porter

Mathew Kuttolamadam (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**

Austin B. Asgill (Professor) (Kennesaw State University)

Eric Redding (Kennesaw State University)

## 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's; 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

# 2022 ASEE ANNUAL CONFERENCE

## SUNDAY, JUNE 26<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Education), Claes Fredriksson (Lead Education Development Manager), Joshua Gargac (Ohio Northern University), Nabila Shamim (Dr) (Prairie View A&M University), Abdul Syed (University of Massachusetts Lowell)

### 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

### 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  
Boyan 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

### Constructing Quadratic Equations modulo N to emphasize the differences between real and modular arithmetic operations

Carlos Salazar  
Constantine Macris (United States Coast Guard Academy)

### Work in Progress: Rethinking two separate engineering and mathematics capstone courses at a small liberal arts university

Girish Upreti  
Denise H. Bauer (Professor)  
Jie Zhou

## 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 Pfluger (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 of School of Technology) (Brigham Young University), Elizabeth Milonas, Sam B Siewert (Associate Professor) (California State University, Chico), Byul Hur (Assistant Professor)

## The Impact of Papers in the ASEE Computing & Information Technology Division

Barry M. Lunt (Director of School of Technology) (Brigham Young University)

## Addressing Learning Objective Gaps Between Rate Monotonic Theory and Practice using Real-Time Simulation Exercises

Sam B. Siewert (Associate Professor) (California State University, Chico)  
Rishab S. Shah (University of Colorado Boulder)

## Do Undergraduate Data Science Program Competencies Vary by College Rankings?

Elizabeth Milonas  
Duo Li

## Multi-Semester Course Staffing Optimization

Mudasser Fraz Wyne (Professor)  
Alireza Farahani  
Esmail 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)

Lakiesha N. Williams

**How Black Women Describe the Culture of their Undergraduate Engineering Education Program (Research)**

Harriet Paige Brown

**A narrative exploration of the in/authentic experiences of Black engineering interns (Work in Progress)**

Gretchen Dietz (Graduate Assistant) (University of Florida)

Elliot P. Douglas (Professor)

**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)

**How College Students Feel about Data Privacy and the Data Economy**

Anindya Roy (Dr.) (Massachusetts Institute of Technology)

Aaron Kessler (Massachusetts Institute of Technology)

**A Modular Approach to Incorporating Public Policy into Engineering Courses**

Barry I. Hyman (Professor) (University of Washington)

**Textual and Quantitative Research on Chinese "Emerging engineering" Policies from the perspective of Policy Tools**

Yongxin Deng

Tuoyu Li

Min Ye (Zhejiang University)

**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)

(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**

Cortney 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)

Amal 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 Diligent**

**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, MathWorks Gen Sasaki, Customer Success Engineer, MathWorks Hoda 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 Avriithi (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)

#### Design, develop, launch: the making of an innovative

#### 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 Jonahs (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)

### 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's 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

### 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.

### 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"

### 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)

# 2022 ASEE ANNUAL CONFERENCE

## SUNDAY, JUNE 26<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Taylor Joy Mitchell (Associate Prof. of Humanities and Composition ) (Embry-Riddle Aeronautical University - Daytona Beach)

Chad Rohrbacher (Associate Director of CTLE) (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-purpy (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 Szczerbinska (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 Moshirpour (University of Calgary)

Emily Ann Marasco (Instruction, Program Director) (University of Calgary)

Jalal Kawash (University of Calgary)

Laleh Behjat

Mahmood 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



Byul Hur (Assistant Professor)

## **Self-Confidence of Undergraduate Students in Designing Software Architecture**

Lotfi Ben Othmane

Ameerah Muhsinah Jamil (Iowa State University of Science and 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 of 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)

### **STUDENT PAPER: What We Learned, When We Learned It, and How We Learned It: Takeaways from an Institution's Aerospace Engineering Capstone Experience**

Claire Schuessler (Saint Louis University)

Samantha Carlowicz (Graduate Research Assistant)

Justin K. Fantroy (Saint Louis University)

Haochen Rong (Saint Louis University)

Srikanth Gururajan (Saint Louis University)

### **Student Paper: Study of COVID-19 Impact on Aviation Maintenance Training in Indonesia**

Gita Andhika Swastanto (Purdue Polytechnic Graduate Programs)

Fiodesy Gemilang Putri (Arizona State University, Polytechnic campus)

Julius Keller (Assistant Professor) (Purdue University at West Lafayette (COE))

Edward Faith (Professor) (Arizona State University, Polytechnic campus)

## **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

## 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. Lottero-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)**

Jennifer Taylor

Amy Wilson-Lopez (Associate Professor)

### **Designing engineering activities that use narratives to evoke empathy and support girls' engagement: A guide for practitioners (Resource exchange)**

Susan M Letourneau (Senior Research Associate)

Dorothy T. Bennett

Katherine Mcmillan Culp

### **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 M Pachnowski (Professor, Math Education)

Brad Maguth (Professor)

### **Biologically Inspired Design for Engineering Education-9th/10th Grade Engineering Unit (Curriculum Exchange)**

Roxanne Moore

Julia Varnedoe (Research Associate II)

Michael Helms (Dr.)

Caroline Doughton Greiner

Abeera 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)



# 2022 ASEE ANNUAL CONFERENCE SUNDAY, JUNE 26<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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  
Gabiella M. Sallai (Pennsylvania State University)

## **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)

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 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)

## 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 Gamieldeen

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

### Improving Engineering Transfer Student Onboarding and Retention through Scholarship and Programmatic Interventions

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)

### Building Partnerships to Bridge the Transfer Gap and Increase Student Success

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**

Gunter 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

Gunter 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)

### **STEM Students' Technology Choice Differences for Solving a Graphing Question - Two Different Institution Students'**

### **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)

## **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**

Dimantha Samarajeewa Kottawa Gamage

Durward K. Sobek (Vice Provost) (Montana State University - Bozeman)

## **Investigation of a professor's feedback on student's divergent thinking performance: an electrodermal activity experiment**

Elif Elcin Gunay

Danielle Dickson

Rafal Jonczyk (Dr)

Janet Van Hell (Professor of Psychology and Linguistics) (Pennsylvania State University)

Zahed Siddique (Professor) (University of Oklahoma)

Gul Kremer

## **Recommended Pedagogies to Achieve Fundamental Theorem Learning and Software Integration in Statistical Data Analysis Course (Work in Progress)**

Tara L. Ippolito (University of Florida)

Mckenzie Landrum (Lecturer) (University of Florida)

Austin Hayes

Sanaz Motamedi (Dr.) (University of Florida)

## **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 a**

### **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 (UEM), 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 26<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### **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.

### **U22690 - Engineering Libraries Division Social**

**8:00 p.m. - 10:00 p.m.**

Information available on the ELD website.

### **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 IFEEES, GEDC**

**7:00 p.m. - 9:30 p.m.**

Alma Restaurant; 528 University Ave SE, Minneapolis

Reception and dinner for IFEEES, 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)

# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### 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)), Olga 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 Jesiek (Associate Professor) (Purdue University at West Lafayette (COE))

Stephanie Claussen (Assistant Professor)

Dayoung Kim (Ph.D. Candidate) (Purdue University at West Lafayette (COE))

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)

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 Sitzings**

Adam C Powell (Associate Professor) (Worcester Polytechnic 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 H 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. Anastasio (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)3.



# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

The Engineering Design Process Portfolio Scoring Rubric (EDPPSR) – Initial Validity and Reliability (Fundamental)4. 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)

## **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)**

Moderator: Lamyaa El-Gabry Promoting STEM Interest in Middle School Girls through Strategic Engagement with College Student Mentors, Steadman et al. K-12 STEM Outreach: A Model to Reinforce Undergraduate Fundamentals and Inspire Future Generations, Smith et al. Engagement in Practice: The GOAL Engineering Kit Initiative, Aruch et al. Investigating the Role of Compassion in Engineering Service Learning, Howell et al. The Road to Higher Education - Is the Pipeline Half Empty or Half Full? An Analysis of Student Experiences, Perceptions, and Backgrounds When Considering a Career in Engineering, Lampley et al.

### **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

stone sawyer (United States Military Academy)

Charles Nyamburi Nyakundi (United States Military Academy)

### **Engagement in Practice: The GOAL Engineering Kit Initiative**

Matthew Aruch (Assistant Director) (University of Maryland College Park)

Vincent Nguyen (Senior Lecturer) (University of Maryland College Park)

### **Engagement in Practice: The Road to Higher Education - Is the Pipeline Half Empty or Half Full? An Analysis of Student Experiences, Perceptions and Backgrounds When Considering a Career in Engineering**

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)

### **Investigating the role of compassion in engineering service-learning**

Nathan Howell

Vinu Unnikrishnan (Assistant Professor) (West Texas A&M University)

Kenneth Leitch

## M85452 - ETD - A Technology Potpourri III

9:45 am - 11:15 am

205B, Convention Center

Mix of topics Curriculum (Course and Lab) innovation and development Current issues in ET and integration of those into ET curricula (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 curricula 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

### Blending the Entrepreneurial Mindset into a Learning Module with a HVAC Design Project: Pilot Implementation

Carmen Cioc (Associate Professor)

Noela A. Houghton (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)

### 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

## M248 - Cooperative and Experiential Education Division Technical Session 1

9:45 am - 11:15 am

102F, Convention Center

### Experiential Learning as a Tool for Deep Collaboration Between Business and Engineering Majors

Philip Appiah-kubi

Melissa McCabe (University of Dayton)

Vincent C Lewis (Associate Vice-President, Ent. Initiatives) (University of Dayton)

Rebecca P. Blust (Assistant Professor) (University of Dayton)

James Brothers (University of Dayton)

### 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)

### 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)

### Co-ops are Great! but What are the Numbers Telling Us?

Paul John Ackerman (Dr. Paul Ackerman)

Kelly Ann Arcieri (Co-op/Internship Advisor) (York College of Pennsylvania)

### Remote Research for Undergraduate Students: Summer Undergraduate Research Experience (SURE)

Nazli Aslican Yilmaz Wodzinski (Dr.) (Minnesota State University, Mankato)

Stephen J Druschel (Professor) (Minnesota State University, Mankato)

Matthew P. Simones (Assistant Professor) (Minnesota State University, Mankato)

## M25325 - Concept Maps for Assessing Entrepreneurial Mindset

9:45 am - 11:15 am

200D, Convention Center

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**Moderators:** Cheryl A Bodnar (Associate Professor, Experiential Engineering Education), Elise Barrella (Dr.)

**Speakers:** Maria-isabel Carnasciali (Associate Professor), Heather Dillon (Professor), Juan M Cruz (Rowan University), Krista M Kecskemety (Associate Professor of Practice), Elif Miskioglu (Assistant Professor)

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)

This technical session for the Environmental Engineering Division will include the following talks: 1. The Green Escape Room: Part 2 - Teaching Students Professional Engineering Ethics by Applying Environmental Engineering Principles and Deciphering Clues and Puzzles 2. Particle Sampling and Analyses Using Computer-based Approaches 3. Developing an Integrated Environmental Engineering Curriculum 4. A Framework to Assess an Undergraduate Environmental Engineering Curriculum in Addressing the Grand Challenges for Environmental Engineering in the 21st Century

**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 Plymness (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

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 Svihla, 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 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&#39;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 I**

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 Ndoeye (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**

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### in an Introductory Thermodynamics Course

Haejune Kim (Assistant Professor of Instruction) (Texas A&M University)

Phapanin Charoenphol (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.)

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

## 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

## 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)

#### Undeclared - 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 Asgarpour (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<sup>1</sup>; women engineers earn 10% less than male engineers<sup>2</sup>; 61% of women engineers report that they must prove themselves repeatedly to get the same level of respect and recognition as their colleagues<sup>2</sup>; 48% of women in STEM jobs report discrimination in the recruitment and hiring process<sup>3</sup>; 39% view gender bias as a primary reason for not being offered a promotion<sup>3</sup>; and 66% report there is no clear path forward for them in their career at their current companies<sup>3</sup>

### 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) 2. Simulated Engineering Teaching Experiences: Preservice Teachers Learning to Facilitate Discussions to Help Students Become Informed Designers (RTP) 3. Manifestation of Integration into Practice: A Single Case Study of an Elementary Science Teacher in Action (RTP) 4. Examining Student Cognitive Engagement in Integrated STEM (Fundamental)

#### 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)

#### 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

#### Manifestation of Integration into Practice: A Single Case Study of an Elementary Science Teacher in Action (Research to Practice)

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)

#### 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

## 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**

Weiyang 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)

### **Work in Progress: Impact of COVID-19 and the Digital Divide on the Sense of Belonging for Undergraduate Engineering Students**

Kasia Gallo

Aileen Huang-saad (Associate Professor)

Cheryl Gomillion



# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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-Trittip, 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'Neil Ellis)109: Future Career Pathway Perceptions of Low-Income Computing Students (Bailey Bond-Trittip)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'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-Trittip  
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-mehrizi (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)

krithikashree 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 Rokooei (Mississippi State University)

Mohsen Garshasby (Assistant Professor) (Mississippi State University)

Afshin Hatami (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 Preusser (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)

**An individual case study on learning strategies and activities to increase engagement in their courses: An instructor's approach and rationale to instructional design**

Navid Yaghoubisharif (Oregon State University)

Shane A. Brown (Associate Professor) (Oregon State University)

Amy L Brooks

**Historical Natural Evolution of Thought of a First of its Kind Online Doctor of Technology Degree Program in a Tier-1 University**

Mitchell L Springer (Executive Director) (Purdue University at West Lafayette (COE))

## 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 Thiagarajah

Kent J. Crippen (Professor of STEM Education) (University of Florida)

Bruce Frederick Carroll (Associate Professor)

Tracy L. Johns (University of Florida)

**From knowing to doing: Changes in competency beliefs of developing engineers**

Kelsey Scalaro (Graduate Student)

Indira Chatterjee (Associate Dean of Engineering) (University of Nevada, Reno)

Derrick James Satterfield (Doctoral Candidate) (University of Nevada, Reno)

Ann-Marie Vollstedt (Teaching Assistant Professor) (University of Nevada, Reno)

Adam Kirn (Associate Professor)

## 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

## 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**

Cortney 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)

### Presenting an Accessible yet Rigorous Development of the Zone Temperature Equation: An Important Thermodynamic Result Inherently Interesting and Educational

Sheldon M. Jeter (Associate Professor) (Georgia Institute of Technology)  
christopher fernandez

### Supervisory Controls and Data Acquisition Instructional

### 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 Akelian (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 Nasser (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-mehrizi (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 Scalero (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)

Huihui Qi

### Action-State Orientation as An Impediment to Engineering Student Success

Paul E Spector

Chris S Ferekides (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)

# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### **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 Baghdadchi (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

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

## **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.

## **M85460 - ETD - Electrical And Computer Engineering Technology Department Heads Association (ECETDHA) Meeting**

**11:30 am - 1:00 pm**

M100C, Convention Center

The mission of the Electrical and Computer Engineering Technology Department Heads Association (ECETDHA) is to promote the advancement, understanding, and appreciation of electrical, electronics, and related engineering technology programs at all levels. This session is open to anyone who has interest and is not limited to just department heads.

## **M2443 - Aerospace Division Technical Session**

**11:30 am - 1:00 pm**

205C, Convention Center

### **Data Acquisition for Collegiate Hybrid and Solid Rocketry - An Undergraduate Research Experience**

Sanjay Jayaram (Associate Professor) (Saint Louis University)

Hunter Michael Pritzlaff (Saint Louis University)

Andrew Stack

### **Challenges and Opportunities for Virtual Reality in Higher Education**

# 2022 ASEE ANNUAL CONFERENCE MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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)

## **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**

## **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)

## **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)

# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

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Gugulethu Sibanda (Bucknell University)

Meaghan Elizabeth Yant (Bucknell University)

### **I Think We Should Break Up...Class, That Is**

Matthew Swenty

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 Cartiaire 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)

## 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



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### 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&M University)

Samantha Ray

Malini Natarajathinam (Associate Professor)

Michael Johnson (Professor)

Shawna Thomas (Instructional Assistant Professor)

John Michael Moore (Instructional Assistant Professor) (Texas A&M University)

Robert Harold Lightfoot (Associate Professor of Practice) (Texas A&M University)

Tracy Anne Hammond (Professor)

Karan Watson (Provost Emeritus & Sr. Professor) (Texas A&M University)

### There and Back Again: Lessons Learned from Facilitated Faculty Discussions on the Move Online and then Back Face to Face

Karan Watson (Provost Emeritus & Sr. Professor) (Texas A&M University)

Tracy Anne Hammond (Professor)

Shawna Thomas (Instructional Assistant Professor)

Kristi Shryock

Randy Hugh Brooks (Professor) (Texas A&M University)

Robert Harold Lightfoot (Associate Professor of Practice) (Texas A&M University)

Donna Jaison

Lance Leon Allen White (Graduate Research Assistant)

### Lessons Learned: Developing Homebrew Software Tools to Enhance and Combine Grading, Assessment, and Research

Benjamin Daniel Chambers (Associate Professor of Practice) (Virginia Polytechnic Institute and State University)

David Gray (Associate Professor of Practice)

Matthew James (Associate Professor of Practice)

Stephen Moyer (Virginia Polytechnic Institute and State University)

Po-Jen Shih (Virginia Polytechnic Institute and State University)

## 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

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**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**

Urmi 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

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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 Pecan (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)

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### 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

### Ho okele: 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 Alexandra 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 Alexandra 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)

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York at Binghamton)

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 Cohen Bringing 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-



Based Community Engagement Engineers Without Borders Guatemala Case Study, Leidig et al. Community Service Builds Excitement in Design, Mikesell et al. Engagement in Practice: A Model for Community Partnership in an Infrastructure Capstone Course, Hunt and Williamson Teaching Students to Incorporate Community Perspective into Environmental Engineering Problem Definition through Iterative Conceptual Site Models, Schwartz et al.

### **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&#39;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)

## **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 (Assistant Professor)

### **Adapting a Literature-aided Design Project in Engineering Education for Improved Student Engagement**

Kendall Teichert

## **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

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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) 2. On the Development of Cybersecurity- and Computing-centric Professional Development and the Subsequent Implementation of Topics in K-12 Lesson Plans (RTP) 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 Wolfenbarger (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)

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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)

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Brooke Elizabeth Cochran (University of Colorado Boulder)  
Cassandra J McCall (Dr.)  
Wade H Goodridge

Emily Welsh  
A. John Hart  
John Liu (Dr.)

### 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

and instruction.

## **Work in Progress: An Early Look Into the Systematic Review of Project-Based Learning in Engineering Education**

Ibukun Samuel Osunbunmi (Mr)

Ning Fang (Professor) (Utah State University)

## **How Writing a Book on Engineering helped Rewrite Our Interests in the Field - An AutoEthnography**

Kritin Mandala

Zoë Karen Kay Dailey

Kayli Heather Battel

Sreyoshi Bhaduri

Lilianny Virguez (Lecturer)

LISSA ERICKSON

## **Work In Progress: CodeCapture: A Tool to Attain Insight into the Programming Development Process**

Naman Gulati (University of Toronto)

Angy Higgy (University of Toronto)

Hamid Timorabadi

## **Design of the Academic Dashboard: A Tool to Enhance Students' Efficacy in Decision-Making (WIP)**

Haleh Barmaki Brotherton (PhD student)

Jessica Allison Manning (Graduate Research Assistant)

Marisa K. Orr (Associate Professor)

## **Work in Progress -ASL Aspire, an Online Educational Tool for STEM Vocabulary**

Mona Jawad

Aminah Sumayyah Hussain (University of Illinois at Urbana - Champaign)

Ayesha Sumayya Kazi (University of Illinois at Urbana - Champaign)

Ryan James Martin (University of Illinois at Urbana - Champaign)

Reilly Brennan (University of Illinois at Urbana - Champaign)

Abdullah Baali (University of Illinois at Urbana - Champaign)

Khatija Syeda (University of Illinois at Urbana - Champaign)

Shams Alshabani (University of Illinois at Urbana - Champaign)

Ethan Gaughan

Amy Pei Lee

Sri Tejaswini Mediseti (University of Illinois at Urbana - Champaign)

Parima Michareune

Luisa-maria Rosu

## **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

## **M7226 - Architectural Engineering Division Technical Session 1**

**1:45 pm - 3:15 pm**

**102C, Convention Center**

**Speaker: Eugene Kwak (Assistant Professor)**

### **Construction Management Education with Reality Capture: Enabling Communication and Teamwork in a Learner-centered Approach**

Shaghayegh Kurzinski (Ph.D. Candidate) (State University of New York College of Environmental Science and Forestry)

Shayan Mirzabeigi

Mohamad Razkenari (State University of New York College of Environmental Science and Forestry)

Paul Crovella (State University of New York College of Environmental Science and Forestry)

### **Developing an AE Tutoring Engaging Advising & Mentoring (TEAM) Program: a Peer Cohort Environment**

Ryan Solnosky (Associate Teaching Professor)

Moses Ling (Teaching Professor) (Pennsylvania State University)

### **Rethinking the Student Learning Objectives in an Architectural Project-based Course**

## **M514 - ABET SESSION:**



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

**M53333 - WIED Panel:**

**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)

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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)

## **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/**

## **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 Foster 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

## 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**

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Alejandro H Espera

Nicole P. Pitterson (Assistant Professor) (Virginia Polytechnic Institute & State University)

## **Teach an introductory computer engineering course with Multisim SPICE simulation**

Wei-Jer Han (Virginia Polytechnic Institute and 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)

Stephen Campbell Rea

Kylee Shiekh (Colorado School of Mines)

Beck Corby (Rensselaer Polytechnic Institute)

## **The Multiplicity of Care in Engineering Education and Program Building**

Marie Stettler Kleine

Elizabeth A. Reddy (DR.) (Colorado School of Mines)

Jessica Mary Smith (Professor)

## **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." 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 Peebles

### 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 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)

Yun Dong (Ms)

Subhanwit Roy (Iowa State University of Science and Technology)

Benjamin Ahn (Associate Professor)

**Tolerance of ambiguity: A comparison between engineering and non-engineering students**

M. Javed Khan (Department Head)

Chadia A. Aji

**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 Drenth

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**

# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### 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)

### **M4251 - Multidisciplinary Engineering Division Technical Session - Best Paper**

**1:45 pm - 3:15 pm**

### **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)

Following papers will be presented during this session.099: Leveraging the Power of Python for Machine. (M. Rafiq Muqri).102: Can Natural Language Acquisition Theory Inform How People Learn To Program? (Jose Alejandro Cabrera)103: Impact of Late Policies on Submission Behavior and Grades in Computer Programming. (Mandy Barrett)104: Relationship of Students&apos; Engagement with Learning Management System and their Performance- An Undergraduate Programming Course Perspective. (Sarah Rajkumari).

### **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&apos; 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 and Professor, Department of Aerospace Engin), 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 Debs (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 (AssociateProfessor) (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

### 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 Díaz (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

Marissa Tsugawa

Kelsey Scalero (Graduate Student)

Cheryl Cass (Senior Global Academic Program Manager)

Adam Kim (Associate Professor)

### **Perceptions of shared experiences in mentoring relationships: a collaborative autoethnography**

Julie Martin  
Deepthi Suresh  
Paul Jensen

### **Work In Progress: Intersections between mentoring attributes and outcomes among Learning Assistants**

Angela R Bielefeldt (Professor)  
Sabina Anne Schill  
Haley Passov

## **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 Aboutajeddyne (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'Neil, 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 Rugar

Mandeep Raj Pandey (University of Calgary)

Robyn Paul (PhD Student) (University of Calgary)

Victoria Thomsen (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 Ariel 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)

Emily Nicholson

**Solidarity Engineering using a Pedagogy of Love**

Stephen Fernandez

Ankita Kumar

Mariam Tongelidis Alkattan

**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 Vaughen (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)

Kevin S Xu (The University of Toledo)

**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**



## 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.)

## 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

## 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)

## 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

## 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)

## 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 (Profesor)

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

Alejandra 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

## **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.

## **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)

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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**

Kaylla 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-birchimer (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-birchimer (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-birchimer (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)

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Jiahui Song (Associate Professor) (Wentworth Institute of Technology)

Tugba Arsava

### 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)

#### Design and Implementation of an Online Outreach Program for Experimental Measurements (Evaluation)

Aimee Monique Cloutier (Assistant Professor) (Rose-Hulman Institute of Technology)

Eric Constans (Professor) (Rose-Hulman Institute of Technology)

#### Extended Engagement in an Engineering Outreach Program at a Predominately Latinx High School (RTP, Diversity)

Maya Denton (Graduate Student)

Bryant Allson Chambers

Mary Jo Kirisits (Professor)

#### A career as an Engineer: Participant Perception and Attitude before and after an Engineering Summer Camp for Project Discovery Talent Search students at \_\_\_\_\_ University (Evaluation)

Joseph Tang (Assistant Professor) (Western Carolina University)

Nelson A. Granda Marulanda (Assistant Professor)

Jennie V. Dowdle Sorrells (Western Carolina University)

Robert Scott Pierce (Assistant Professor) (Western Carolina

University)

#### Content, Connection and Careers: Kit-Based Learning and Virtual University Connections (Evaluation)

Joanna M. Skluzacek (Professor) (University of Wisconsin - Madison)

Eric Loren Severson (University of Wisconsin - Madison)

Nathan Petersen (University of Wisconsin - Madison)

Martin Willard Johnson (University of Wisconsin - Madison)

### 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)

#### Overview of Standards for Technological and Engineering Literacy (Other)

Philip A. Reed (Old Dominion University)

Kelly Dooley (Executive Director/CEO) (ITEEA)

Tyler S. Love (Assistant Professor of STEM Education) (Pennsylvania State University, Harrisburg, The Capital College)

Scott Bartholomew (Brigham Young University)

#### Views about the Nature of Engineering Knowledge Among Secondary (6-12) Technology and Engineering Teachers (FUNDAMENTAL)

Ryan Brown

Allison Antink-Meyer

#### Principles for Designing Engineering Curricula Grounded in Environmental Justice



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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)

## **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)**

## **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 Baghdadchi (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)

## **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"

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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)

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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 Taimoory (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

Pounch Abbasian

Malini Natarajathinam (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 Educators It'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

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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.

### M512 - ABET SESSION: Foundations for Successful

### 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

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Pamela L Dickrell (Associate Director & Engineer)  
Jeremy A. Magruder Waisome (Instructional Assistant Professor)  
Lilianny Virguez (Lecturer)  
Andrea Goncher (Lecturer) (University of Florida)  
Idalis Villanueva (Associate Professor)

### **WIP: The Impact of Human-Centered Design Modules on Students' Learning in an Introduction to Electronics Course**

Saadeddine Shehab (Postdoctoral Research Associate)  
(University of Illinois at Urbana - Champaign)  
Christopher D. Schmitz (Teaching Professor and Chief Undergraduate Advisor)

## **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  
Rajashakar 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)116: Soil Moisture Determination Using AI Applied to Drone Images. (Biswajit Biswal).117: A Cost Effective Smart Trough Monitoring Alert System. (Emil H. Salib).118: Advancing a Model of Students' Intentional Persistence in Machine Learning and Artificial Intelligence. (Sharon Ferguson).

### **SSCTrac: AI-Powered Soil Moisture Condition Detection**

Biswajit 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 &**



## 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 Ciemny

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)

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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 Garcia 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)

### Synthesis, Analysis and Comparison

Connor Jenkins

Krista M Keckskemety (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)

Irma Y. 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)

## 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

## 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)

Gaea A Hock

Ryan Robert Hansen (Kansas State University)

Jonathan Aguilar (Associate Professor) (Kansas State University)

Nathan P Hendricks (Kansas State University)

Prathap Parameswaran (Associate Professor) (Kansas State University)

Matthew R Sanderson

Rebecca Cors

Melanie Derby (Assistant Professor) (Kansas State University)

### **Developing Cohort Challenges: An Innovative Program for Training Graduate Students to Work in Transdisciplinary Teams**

Anna-Maria Marshall (University of Illinois at Urbana - Champaign)

Jill Heemstra

John J. Classen (Director of Graduate Programs) (North Carolina State University at Raleigh)

Erin Cortus (University of Minnesota - Twin Cities)

Jacek Koziel (Professor) (Iowa State University of Science and Technology)

Deanne Meyer

Anand Padmanabhan (University of Illinois at Urbana - Champaign)

Samuel Powers Reed (University of Minnesota - Twin Cities)

Riveraine Walters

## **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-wolff (Assistant Professor)

### **WIP - iCtrl - A Remote Login Software Application**

Junhao Liao

Haoran Zhang (University of Toronto)

Yizhong Xu (University of Toronto)

Jiaying Li (University of Toronto)

Hamid Timorabadi

### **A project-based platform for students' Robot Operation System (ROS) programming experience**

Yifan Wang

Zhou Zhang (Dr.) (New York City College of Technology)

Yizhe Chang

### **A Path to Computational Thinking and Computer Programming through Physics Problems**

Robert H Mason (Professor)

Hansika Iroshini Sirikumara (Assistant Professor of Engineering and Physics) (Marian University)

## **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

Engineering Education)

## 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 Saftner

Chris Swan (Dean of Undergraduate Education and Associate Professor) (Tufts University)

### 3D Printed Composite Body Illustrating Area and Mass Moment of Inertia with Mohr’s Circle and Pole Method

Timothy Aaron Wood (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)

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### **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))

## **M390 - Equity, Culture, and Social Justice in Education Division Business Meeting**

**3:30 pm - 5:00 pm**

**M100C, Convention Center**

This is the business meeting for the ECSJ business meeting

## **M39397 - Mechanical Engineering Division Business Meeting**

**3:30 pm - 5:00 pm**

**L100C, Convention Center**

Mechanical Engineering Division Business Meeting

## **M41202 - Minorities in Engineering Division Technical Session 6**

**3:30 pm - 5:00 pm**

**212, Convention Center**

**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))

## **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 Svihla

Madalyn Wilson-fetrow (Graduate Student Researcher)  
(University of New Mexico)

Yan Chen

Eva Chi (Professor) (University of New Mexico)

Abhaya 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

### M659 - Council of Institutional Councils

3:30 pm - 5:00 pm

M100A, Convention Center

### 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)

### M7528 - 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,

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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 Authors1Reimagining Engineering Education: Does Industry 4.0 need Education 4.0?Shuvra Das; D. Kleinke; D. Pistrucci2The IMPACT mentoring program: Exploring the benefits of mentoring for emeriti facultySylvia L. Mendez, Jennifer Tygret, Rebecca Keith, Valerie Martin Conley, Comas Haynes, and Rosario Gerhardt3Do Open-Ended Design Projects Motivate First-Year Engineering Students?Chao Wang4Curricular Complexity as a Metric to Forecast Issues with Transferring into a Redesigned Engineering CurriculumDavid 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

# 2022 ASEE ANNUAL CONFERENCE

## MONDAY, JUNE 27<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### 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 re-connect, 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, MN The Long Room Brit'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

# 2022 ASEE ANNUAL CONFERENCE

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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**

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**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**

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**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 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## 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.

## T138552 - Mathematics Business Meeting

7:00 am - 8:00 am

M100HI, Convention Center

## 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

M100A, 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

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

Mark Mills (University of Michigan)

Robin Fowler (Lecturer IV)

Trevion Henderson

Rebecca Matz

Andrew Moffat (University of Michigan)

Madison Jeffrey (University of Michigan)

Caitlin Hayward

**Work-in-Progress: Do International Peers Boost Team-Based Learning Effectiveness in Undergraduate Engineering Education?**

Li Tan

Siqing Wei

Matthew W. Ohland (Dale and Suzi Gallagher Professor of Engineering Education)

**The SO-What Analytical Analysis for Virtual Decision Teams**

Rashmi Mohansingh Solanki

Chad Kennedy

Yash Shirke

**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.

**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))

## 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**

Tyrine Jamella Pangan (STEM Education PhD Student)

Chelsea Andrews

**Preliminary Development and Validation of the Engineering Social Justice Scale**

Benjamin Lutz

Steffen Peuker (California Polytechnic State University, San Luis Obispo)

**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)

Daniela Chocho Nganjo

**T222479 - Engineering Libraries Division Business Meeting**

8:00 am - 9:30 am

Greenway CDE, Hyatt Regency

Moderator: Kari Kozak (Director, Lichtenberger Engineering Library) (The University of Iowa)

Updates from the various committees, update from the PIC I chair, and other events. The event will conclude with Bernhardt, publishing, poster, and longevity awards ceremony.

**T223375 - Building a Research Scholarship Program**

8:00 am - 9:30 am

Skyway AB, Hyatt Regency

This is a ticketed session. To add this ticket to your registration, please click the button below Panel

**T29656 - CIT Division Technical Session #7**

8:00 am - 9:30 am

M101C, Convention Center

Moderator: Reza Sanati-mehrziy (Professor) (Utah Valley University)

Speakers: Wei Zhang (Assistant Professor) (Southern Illinois University Carbondale), Deng Cao, Matthew A. Verleger (Professor of Engineering Fundamentals), Daqing Hou

Following papers will be presented during this session.79: Running a Virtual Research Experience for Undergraduate (REU) Site in Computing Systems. (Wei Zhang).90: Undergraduate Research: Field Plant Classification using Google Colab. (Deng Cao).92: An Undergraduate Research Experience in Unmanned Aircraft Systems (UAS) Cybersecurity Outcomes and Lessons Learned. (Matthew A. Verleger).110: Best Practices and Lessons Learned on Organizing Effective Cohort-based Undergraduate Summer Research during COVID-19. (Daqing Hou).



# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## **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

## **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

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)

## **T25221 - 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**

## **T28229 - 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)

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## **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 McGough 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)

Tershia 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

## 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)

### **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)

## **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)

### Reading the World of Engineering Education: An Exploration of Active and Passive Hidden Curriculum Awareness

R. Jamaal Downey (Dr. )

Idalis Villanueva (Associate Professor)

### The role of neoliberalism in the development of the 'new' engineer

Natalie Wint

## 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



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

Arna Erega (Diversity Counselor & Outreach Specialist for International Students)

Peter Thomas Tkacik (Professor) (University of North Carolina at Charlotte)

### **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)  
Efthalia Chatziefstratiou (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'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: Capstone, 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

# 2022 ASEE ANNUAL CONFERENCE

## TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Patrick David Lovrien (South Dakota State University)  
Bret James Barnett (South Dakota State University)  
Carrie Steinlicht (Senior Lecturer) (South Dakota State University)  
Ekaterina Koromyslova (Associate Professor) (South Dakota State University)

### **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

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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**Moderators: Leslie Nolen (Director, Educational Activities), Andrea L Welker (Associate Dean for Academic Affairs and Professor)**

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' thoughts 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)

Charles Riley (Professor)

David Saftner

## **Practitioner and Academic Surveys + Engineering Education: A Blended Observation of Student Preparedness**

Kevin Dong (California Polytechnic State University, San Luis Obispo)

Scott Mason Francis

Brent Alan Perkins (Mr.)

## **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.

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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## 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 TitleAuthors68Hands-on vs simulation labs in Signals and Systems courseCyrus Habibi (Associate Professor) 69Venturi Meter: Design, Simulate, and TestKristen Thompson

### Hands-on vs simulation labs in Signals and Systems course

Cyrus Habibi (Associate Professor) (University of Wisconsin - Platteville)

### 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 #TitleAuthors27Work in Progress: A Visualization Aid for Learning Virtual Memory ConceptsJohn Nestor & Zheping Yin 27ASupporting Applied Technology and Engineering Students in Introductory Digital Logic Courses Using Logisim-Evolution and BasysJeritt 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  
87Examining K-12 Singaporean Parents' Engineering Awareness: An Initial Study of the Knowledge, Attitude, and Behavior (KAB) Framework (Fundamental)  
88Outreach Program Evaluation through the Lens of Engineering Identity Development (Evaluation)  
89Professional Development Outcomes for Rural Teachers participating in a Research Experience for Teachers Program in Innovative Transportation Systems (Evaluation)  
90The Challenge of Challenges: Virtual Engineering Design Challenges During the COVID19 Pandemic

### 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 28<sup>th</sup> SESSIONS

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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 to Expose 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 Piske (Wartburg College)

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)

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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## **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)

## **Exploring the Presence of Engineering Indices in the Singaporean High School Physics Standards: A Content Analysis (work-in-progress)**

Ibrahim H. Yeter (Post Doctoral Researcher)

Jeffrey D Radloff (Assistant Professor)

## **A review of research on STEM preservice teacher education (Work in Progress)**

Yingqian 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)

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## **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 Nasser (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 Undergraduate 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 CurriculaCortney Holles 63Ethics education in the quantum information science classroom: Exploring attitudes, barriers, and opportunitiesJosephine 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

University)

## **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**

Patjanaporn 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. Chavella 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 students 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. Chavella 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



Lilianny Virguez (Lecturer)

**WIP: Continuous Professional Development**

Evelyn Sowells-boone (Dr.)

Karreem Hogan

## T93619 - Two-Year College Model Design Competition

9:45 am - 11:15 am

Exhibit Hall B & C Foyer, Convention Center

**Moderators:** Philip J. Regalbuto (Instructor), William Allan Simmons (Assistant Professor) (Tidewater Community College)

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.

## T28523 - First-Year Programs Division Poster Session

9:45 am - 11:15 am

Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors74Term Design Project in Fundamentals of Engineering CourseDjedjiga Belfadel (Associate Professor) & John F Drazan (Assistant Professor of Biomedical Engineering) & Isaac Macwan & Elif Kongar (Associate Dean) & Michael Zabinski

**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

## T17679 - Energy Conversion and Conservation Division Poster Session

9:45 am - 11:15 am

Exhibit Hall B & C, Convention Center

**Speakers:** Jaime Ramos-Salas (Associate Professor) (The University of Texas Rio Grande Valley), Joseph Michael Derrick (Graduate)

Board # Paper TitleAuthor 583D Printing of Lithium-Ion Battery Electrode ComponentsJoseph Michael Derrick (Graduate) & Eli Kindomba & Jing Zhang (Associate Professor) & 59Student Training for Motor Performance Assessment in IndustryJaime Ramos-Salas (Associate Professor) (The University of Texas Rio Grande Valley) & Miguel Pineda

**Student Training for Motor Performance Assessment in Industry**

Jaime Ramos-Salas (Associate Professor) (The University of Texas Rio Grande Valley)

Miguel Pineda

**3D Printing of Lithium-Ion Battery Electrode Components**

Joseph Michael Derrick (Graduate)

Eli Munyala Kindomba (Indiana University - Purdue University Indianapolis)

Jing Zhang (Associate Professor) (Indiana University - Purdue University Indianapolis)

## T10658 - Construction Engineering Division Poster Session

9:45 am - 11:15 am

Exhibit Hall B & C, Convention Center

## T38554 - Mathematics Division Poster Session

9:45 am - 11:15 am

Exhibit Hall B & C, Convention Center

Board #Paper TitleAuthors 77Exploring Transfer Students Perceptions of Their Transition Experience in Calculus 2 at a Research Intensive Institution: A Phenomenological StudySteven Edalgo & Karen High & 78Student Learning Outcomes in a Statistics and Probability Course

with a Credit/No Credit Option Gary Koenig

## Student Learning Outcomes in a Statistics and Probability Course with a Credit/No Credit Option

Gary Koenig (University of Virginia)

## Exploring Transfer Student's Perceptions of Their Transition Experience in Calculus 2 at a Research Intensive Institution: A Phenomenological Study

Steven Edalgo (Clemson University)

Karen A High (Professor) (Clemson University)

## 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 CourseDiana Bairaktarova &quot;Maeve Bakic&quot; &quot;Krishna Pakala (Assistant Professor)&quot; &quot;Devshikha Bose&quot;

## 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 TitleAuthors83Creating 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&M University - Florida State University) &quot;Tejal Mulay (Assistant Professor )&quot; &quot;Hongmei Chi&quot; 85Understanding the needs of students with and without disabilities for inclusive UDL-based design of Engineering courses through learning management systemsHongye Liu &quot;Deepak Moparthy&quot; &quot;Lawrence Angrave&quot; &quot;Jennifer R Amos (Teaching Professor)&quot; &quot;David Dalpiaz&quot; &quot;Chrysafis Vogiatzis&quot; &quot;Sujit Varadhan&quot; &quot;Yun Huang&quot; &quot;Rebecca Marie Reck (Teaching Associate Professor)&quot; 86Work-in-Progress: Inspiring Academic Engagement and Motivation of Minority College Students through Transformative Success Stories on Social MediaVictor Garcia &quot;Diane Elisa Golding&quot; &quot;Karla Alejandra Ayala Mendoza&quot; &quot;Suzanne Atiya (Research Assistant )&quot;

### Creating a Virtual Learning Environment for Increasing Awareness of Blockchain Technologies at a Minority Serving Institution

Shonda L Bernadin (Associate Professor) (Florida A&M University - Florida State University)

Tejal Mulay (Assistant Professor ) (Florida A&M University - Florida State University)

Hongmei Chi (Florida A&M University - Florida State University)

### Understanding the needs of students with and without disabilities for inclusive UDL-based design of Engineering courses through learning management systems

Hongye Liu (Teaching Assistant Prof.)

Deepak Moparthy (University of Illinois at Urbana - Champaign)

Lawrence Angrave (Teaching Professor)

Jennifer R Amos (Teaching Professor) (University of Illinois at Urbana - Champaign)

David Dalpiaz (University of Illinois at Urbana - Champaign)

Chrysafis Vogiatzis (University of Illinois at Urbana - Champaign)

Sujit Varadhan (University of Illinois at Urbana - Champaign)

Yun Huang

Rebecca Marie Reck (Teaching Associate Professor)

### Developing Deeper Student Mentoring Relationships: Black Engineering Faculty Translating their Mentee Experiences to Students (Research)

Sylvia L. Mendez (Professor/Chair)

Jennifer Tygret

Jasmine C. White

Kinnis Gosha

### Inspiring Academic Engagement and Motivation of Minority College Students through Transformative Success Stories on Social Media (Work-in-Progress)

Victor Manuel Garcia (Research Associate)

Diane Elisa Golding (Assistant Professor of Instruction) (University of Texas at El Paso)

Karla Alejandra Ayala Mendoza

Suzanne Atiya (Research Assistant ) (University of Texas at El Paso)

### Creating a Community-Focused Lab Section in a Large Computer Science Course (Experience)

Jule Schatz

Zahra Makki (University of Michigan)

Elizabeth Mann Levesque (Instructional consultant) (University of Michigan)

Heather Rypkema (Universit

## 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 Program

Kelly 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 TitleAuthors60Developing the Spatial Skills of Neurodiverse StudentsMoved to Design Graphics Technical Session 3 Sheryl A. Sorby (Professor) &quot;Savannah Stark (PhD Student)&quot; &quot;Christina Carnahan&quot; 61Differences 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; &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)

Christina Carnahan (University of Cincinnati)

### 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)

## 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 TitleAuthors64Introducing Arduino Library Kits for CheckoutJames Thomas Mcallister (Engineering and Honors College Librarian) (University of Arkansas) 65More-Inclusive Practices for Science Technology Engineering and Mathematics (STEM) Library Collection ManagementSusan Wainscott

### More-Inclusive Practices for Science Technology Engineering and Mathematics (STEM) Library Collection Management

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 Author16Can the COVID-19 pandemic boost collaborative online international learning (COIL) in engineering education? â€ A review for potential implementationsErick Vasquez &quot;Erick Ramos&quot; 17Embedding process safety modules within core CHE coursesChris Barr &quot;Laura Hirshfield (Lecturer)&quot; 18Teacher Impact on Student Learning Using LC-DLM Implementations in the ClassroomHeidi Curtis &quot;Jacqueline Gartner (Assistant

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Professor) & Prashanta Dutta (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) & Olusola Adesope (Professor) &

## **Teacher Impact on Student Learning Using LC-DLM Implementations in the Classroom**

Heidi Curtis (Campbell University)  
Jacqueline Gartner (Assistant Professor)  
Prashanta Dutta (Professor) (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)

## **[redacted]: Embedding process safety modules within core CHE courses**

Chris Barr (Undergraduate Instructional Laboratory Supervisor)  
Laura Hirshfield (Lecturer)

## **T678 - Electrical and Computer Engineering Division Poster Session**

**9:45 am - 11:15 am**

**Exhibit Hall B & C, Convention Center**

The ECE Division Work-in-Progress papers presented in poster format.

## **Work-in-Progress: Sense of Belonging Among Underrepresented Voices in ECE**

Chelsea Haines Lyles (Virginia Polytechnic Institute and State University)

Emily M Burns (Graduate Student) (Virginia Polytechnic Institute and State University)

Thomas Earl Koonce

Lisa D. McNair (Professor)

Annie Yong Patrick (Ms.)

## **Work-in-Progress: Introductory Reinforcement Learning for Student Education and Curriculum Development Through Engaging Mediums**

Ramakrishnan Sundaram (Professor) (Gannon University)  
Benjamin Lubina (Gannon University)

## **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**



# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## 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 SequenceBrenda Read-Daily (Associate Professor) &quot;Tomas Enrique Estrada (Assoc Prof of Electrical Engineering)&quot; &quot;Kurt M Degoede (Professor of Engineering and Physics)&quot; &quot;Jean Carlos Batista Abreu (Assistant Professor)&quot; 67Work in Progress: High School Student Training in Biomedical Engineering Innovation through Co- and extracurricular ActivitiesJulia A Scott &quot;Navid Shaghaghi&quot; &quot;Shraddha Chaplot&quot;

&quot;Prashanth Asuri&quot;

## 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

Brenda Read-Daily

Tomas Estrada

Kurt DeGoede

Jean Carlos Batista Abreu (Assistant Professor) (Elizabethtown College)

## T15671 - Educational Research and Methods (ERM) Division Poster Session

9:45 am - 11:15 am

Exhibit Hall B & C, Convention Center

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

Want a fun and interactive way to talk about some of the super awesome work being done by ERM-ers? The ERM Poster Session is for you! Poster sessions are great ways to have a more interactive dialogue with authors/presenters and discuss the cool things they've been up to.

## 21st Century Engineering Learning and Teaching: Malaysia Perspective and Direction

Syed Ahmad Helmi Syed Hassan "Khairiyah Mohd-Yusof" "CHIN CHIA YUAN" "Fatin Aliah 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 McGowen (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 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## Affective Pathways

Emma Treadway (Assistant Professor)

Jessica Swenson

Melissa Joan Caserto (University at Buffalo, The State University of New York)

## Social Capital During COVID-19: Research Case Studies from U.S. and U.K. Contexts

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 CollegeProf.

Mary A. Armstrong, Lafayette College2021

**Best Zone I and Best Overall Zone Paper Winner**

## A Study of Available Time for Engineering Undergraduates' Involvement in Co-curricular ActivitiesSreeram 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. Hargrove2022

**Outstanding Teaching Award**

Paul Nissenson, Cal Poly Pomona

## T35510 - Olmsted Awardee Conversation

11:30 am - 1:00 pm

101C, Convention Center

**Moderator: Juan C. Lucena (Professor)**

**Speakers: Amy Slaton, Dean Nieusma (Associate Professor and Director), Alice Pawley (Professor), Sean Ferguson, Justin L Hess (Assistant Professor)**

# 2022 ASEE ANNUAL CONFERENCE

## TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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

#### Greenway CDE, Hyatt Regency

**Speakers:** Chelsea Leachman (Science and Engineering Librarian) (Washington State University), Erin Rowley (Engineering Librarian) (University at Buffalo, The State University of New York), Margaret Phillips (Associate Professor of Library Science) (Purdue University at West Lafayette (COE)), Daniela Solomon (Engineering Librarian)

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)

Karin 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**

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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## **the education for engineers in the UK: A historical study. Part 2. Its accidental evaluation.**

John Heywood

## **Culture and the development of a unique sub-system for the education of engineers for industry in the U.K.: A historical study. Part 1. The culture.**

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 Ladislav 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**

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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## 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)

## T15586 - Research to Practice: Answering the Call to Action

1:45 pm - 3:15 pm

Nicollet D2/D3, Hyatt Regency

**Moderators:** Courtney June Faber (Lecturer and Research Assistant Professor), Adam Kirn (Associate Professor), Cassandra J McCall (Dr.), James Pembridge

This is a ticketed session. To add this ticket to your registration, please click the button below. ASEE declared a year of action on social justice and equity. To meet that call, ERM will collaborate with the Minorities in Engineering and Equity, Culture, and Social Justice in Education Divisions to offer a special session focused on promoting and translating the social justice and equity research presented at ASEE 2022 into actionable steps that engineering educators and administrators can implement in their own classrooms and at their own academic institutions.

## T3070 - Computers in Education 4 - Online and Distributed Learning I

1:45 pm - 3:15 pm

## 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)

Yizhe Chang

Andy Zhang (Professor) (New York City College of Technology)

Haven)

Maria-isabel Carnasciali (Associate Professor)

## 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)

Electrical and Computer Engineering Laboratory and SoC Developments ECE Division Technical Session 6

### Project-Based Learning for Second-Year ECE Undergraduate Education

Andrea Schuman

Lisa D. McNair (Professor)

Justin Kleiber

### Implementation of Competency-Based Learning in a Laboratory-Focused Analog Design Course

Matthew Spencer

### A Novel Project-Oriented System on Chip (SoC) Design Course for Computer and Electrical Engineers

Bill D Carroll (Professor) (The University of Texas at Arlington)

Jason Losh (Professor of Practice) (The University of Texas at Arlington)

### Development of Open-Source Comprehensive Circuit Analysis Laboratory Instructional Resources for Improved Student Competence

Sandip Das

Craig A Chin (Dr.) (Kennesaw State University)

Sheila Donehoo Hill (Kennesaw State University)

### Leveraging Entrepreneurial Mindset Learning and Makerspace Prototyping to an Advance Embedded Systems System-on-Chip Course

Christopher Martinez (Associate Professor) (University of New

## 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:** Mellissa Ingabire, William Howell (student), Shivangi Pandey (student), Juma Waganda (student), Ben Koch, Don H Weinkauff (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.

Business meeting for the Chemical Engineering division

## T730 - Biological and Agricultural Engineering Division Technical Session 1

1:45 pm - 3:15 pm

## 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)

## 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.

## 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 Students 2. Enhancing Undergraduate Students' Sensing and Data-informed Decision-making Through a Smart Cities Project 3. Effectiveness of a Hyflex Teaching Pedagogy in Environmental Engineering Education on Student Performance and Course Outcomes 4. 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)

Benjamin Michael Wallen (LTC) (United States Military Academy)

## T27241 - Faculty Development Division Technical Session 3

1:45 pm - 3:15 pm

200F, Convention Center

Moderator: Andrea Surovek

Speaker: Homero Murzi (Assistant Professor)

**The importance of female crash test dummies: Bringing equity discussions into engineering classrooms through questioning inequitable product design**

Joseph Henry

Kevin M Flaieih

Natascha Trellinger Buswell (Assistant Professor of Teaching)

**Work in Progress: What Makes "Good" Engineering Pedagogy? Preliminary Results from a Qualitative Study of Engineering Faculty**

Saralyn McKinnon-Crowley (Postdoctoral Fellow)

Todd M. Fernandez (Lecturer) (Georgia Institute of Technology)

Sara Schley

**WIP: Comparing Engineering Faculty's Perceptions of Undergraduate Student Writing Abilities with Students' Self-Perceptions**

Amy K Barton (Coordinator and Instructor)

John Aaron Grimes

Shelly Sanders (Instructor) (Mississippi State University)

Alexis P. Nordin (Instructor)

**WIP: Faculty Developer's perceptions of Engineering Instructional Faculty engagement in instructional professional development at HSI's**

Valerie Vanessa Bracho Perez (Graduate Research Assistant) (Florida International University)

Meagan R. Kendall (Associate Professor)

Gemma Henderson (Director) (University of Miami)

**The Use of Lean Principles to Improve Teaching Efficiency for Engineering Courses**

John Mirth

## T28191 - First-Year Programs Division Technical Session 11: Program Descriptions and Learning Analytics

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

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

**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  
Nitilaksha 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)

Jack Bringardner (Assistant Dean of Academic and Curricular Affairs) (New York University Tandon School of Engineering)

## **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

**Moderators:** Siamak Farhad (Associate Professor), Richard Chiou (Associate Professor) (Drexel University), Irina Nicoleta Ciobanescu Husanu (Associate Professor) (Drexel University)

**Enhancing Engagement and Qualitative Output of Technical Projects Through Competing Team Assignments**

Immanuel Edinbarough

Jose Jaime Taha-Tijerina (Dr.) (The University of Texas Rio Grande Valley)

Aditya Akundi (Assistant Professor)

**Design and Development of a Manufacturing Process and**

## 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

**Moderators:** Md Fashiar Rahman (University of Texas at El Paso), Yalcin Ertekin (Clinical Professor) (Drexel University), Amit J Lopes

## 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 Shaykhan (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 Mehdiabadi (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 Sajadi (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!

## **T75442 - 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!

## **T75558 - Member Feedback on New Website, Business, and Paper Management Systems**

**1:45 pm - 3:15 pm**

Ballroom A, Convention Center

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

## **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 X&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 & 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)

## 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)

Pavel Pavlovich Pisarchuk (Junior Engineering Student) (Washington State University)

Allegra A Bryant

Danielle Gedlick (Washington State University)

Terry Sjolander (Washington State University)

**BYOE: Making Connections between Fluid Mechanics and Abstract Painting**

Thomas Shepard (Clinical Professor) (University of St. Thomas)

Charles Mossey

Jacob John Swanson

Colin Huntington (University of St. Thomas)

Mary Murphy

**MATLAB Curriculum Based in Experimental Setups with Authentic Data Collection and Analysis Experiences**

Brian Patrick O'Connell (Associate Teaching Professor)

Jada Wong

**Comparing labs before, during, and after COVID in a Measurements and Analysis Course**

Bridget Smyser

**Heaving Homemade Buoys: A Project Leveraging Smart Phone Movies and MATLAB-Based Image Processing to Teach Dimensional Analysis in an Undergraduate Fluid Mechanics Course**

Hans Mayer

Andres Ikaika Elzaurdia

Christian Clephan (California Polytechnic State University, San Luis Obispo)

Arturo Mario Flores

## 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

### **T85454 - ETD - ET Pedagogy I**

**1:45 pm - 3:15 pm**  
**205B, Convention Center**

ET Pedagogical advancements and issues

#### **Soft and Hard Skills Balance among Engineering & Engineering Technology Graduates**

Yury Alexandrovich Kuleshov (Purdue University at West Lafayette (PPI))  
Anne M Lucietto (Associate Professor)

#### **Improving Academic Performance of First-Generation Students: A Case Study of Mentoring Program**

Shubham Torvi  
Bimal P. Nepal (Professor) (Texas A&M University)  
Michael Johnson (Professor)

#### **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**

## **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)

## **T9056 - Systems Engineering Division Technical Session 1**

**1:45 pm - 3:15 pm**

**102A, Convention Center**

### **Gauging Diversity and Inclusion in Systems Engineering Education**

Henry Lester (Associate Professor) (University of Dayton)  
Kellie Schneider (Associate Professor) (University of Dayton)  
Sarah Miller (University of Dayton)  
Raymond Smith  
Corinne Mowrey (Assistant Professor) (University of Dayton)

### **A Comparison of Two Scenario-Based Assessments of Systems Thinking**

Siddhant Sanjay Joshi (Graduate Research Assistant) (Purdue University at West Lafayette (COE))  
Kirsten A. Davis (Assistant Professor)  
Lori Czerwionka (Purdue University at West Lafayette (PPI))  
Elisa Camps Troncoso (Purdue University at West Lafayette (PPI))  
Francisco J Montalvo

### **Open Process Distributed Automation using IEC 61499**

Irene Prado  
Weining Feng (Associate Professor) (University of Houston - Downtown)

### **Complexity in the Classroom Special Session: Teaching and Learning the Cynefin Framework by Applying it to the Classroom**

Jennifer Karlin (Professor)  
L. Eric James (Adjunct Professor, Engineering Management) (Minnesota State University, Mankato)  
Lauren Singelmann

### **A Pilot Study Assessing Student's Problem and Information Identification Skills in an Introductory Engineering Design Course**

Andrea Goncher (Lecturer) (University of Florida)  
Mengyu Li (Instructional Assistant Professor) (University of

Florida)

John Alexander Mendoza (Instructional Assistant Professor) (University of Florida)

## **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)  
John S Gero (Dr) (University of North Carolina at Charlotte)  
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)

## **T9421 - CIT Division Business Meeting**

**1:45 pm - 3:15 pm**

**M100D, Convention Center**

Computing and Information Technology Division Business Meeting. Afsaneh Minaie (Division Chair) Mudasser F. Wyne (Program Chair) Tracy Anne Hammond (Treasurer and Web Master)

## 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

Katy 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 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Nathalie Duval-couetil (Associate Professor and Director)  
(Purdue University at West Lafayette (COE))

Alanna Epstein (University of Michigan)

Aileen Huang-saad (Associate Professor)

### **The Role of Mentorship in Student Preparation for Impactful Internships**

Tim Dallas (Professor) (Texas Tech University)

Heather Greenhalgh-spencer (Dr.) (Texas Tech University)

Kelli M. Frias

### **Experiential Entrepreneurship in Food Engineering: Student Perspectives on Three Student-Initiated Ventures**

Gary Lee Thompson (Assistant Professor) (Rowan University)

Prince Mensah Atsu (Rowan University)

Bob Patterson (Rowan University)

### **"Why do I need to know what they want?" Stimulating empathy among engineering students in entrepreneurial accelerators**

Aleksandr Litvinov (PhD candidate)

Anne P Gardner (Associate Professor)

Sojen Pradhan

Jeri Childers (Fellow)

### **Work In Progress – The Process of Developing a Multilayered Mentor Model at our Engineering Entrepreneurship Summer Institute**

Lauri Olivier (Director, Engineering Entrepreneurship)  
(Villanova University)

Megan Kempf

Rick Stumpf (Assistant Director of Engineering  
Entrepreneurship) (Villanova University)

## **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)**

## **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 T11464 - ETD, CEED, CPD, CIPD - 2023 CIEC Board Meeting**

**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!

## **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 Baziyar 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 Baziyar 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 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)

**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 Tatum (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&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)

**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'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&M University)

Camille S. Burnett (Assistant Professor) (Prairie View  
A&M University)

Karen E Rambo-hernandez (Associate 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**

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

**Moderators:** Abigail Clark, Jill Davishahl (Assistant Professor and First Year Programs Director) (Western Washington University)

## **Sensitivity Preservation and Precision of Plagiarism Detection Engines for Modified Short Programs**

Dylan Ryman (University of Cincinnati)

P.K. Imbrie (Head and Professor, Department of Engineering Education and Professor, Department of Aerospace Engin)

Jeff Kastner (Professor Educator) (University of Cincinnati)

## **Turns Out Our Exams Were Pointless, So We Changed Our Assessment Strategy**

Laura K Alford (Lecturer and Research Investigator)

Heather Rypkema (University of Michigan)

Harsh Jhaveri

Ryien Hosseini (University of Michigan)

Megan Beemer (University of Michigan)

## **Analyzing the Use of Embedded MATLAB® Laboratory Problems in an Online Interactive Textbook**

Yasaman Adibi

Oscar Rios (Engineering Content Developer) (zyBooks, A Wiley Brand)

Nikitha Sambamurthy (Engineering Content Lead) (zyBooks, A Wiley Brand)

## **Analyzing First-Year Students' Motivation and Exposure Towards an Advanced Topic During an Introductory Coding Course**

Emily Marie Haluschak (Graduate Student) (Purdue University at West Lafayette (COE))

Breejha Sene Quezada (Purdue Engineering Education)

Gavin David Bidna (Purdue University at West Lafayette (COE))

Amanda Johnston

Kerrie A Douglas (Assistant Professor of Engineering Education)

Tamara J Moore (Professor of Engineering Education) (Purdue University at West Lafayette (COE))

## **Relationship between Course Engagement and Educational Application Engagement in the Context of First-year Engineering Students**

Saira Anwar (Texas & M, Department of Multidisciplinary Engineering)

Ahmed Ashraf Butt

Muhsin Menekse (Associate Professor) (Purdue University at West Lafayette (COE))

## **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 &apos;Kemi&apos; Ladeji-osias

This session will feature a panel of NSF program directors and principal investigators. The panelists will provide information about the programs and there will be an opportunity for Q&A.

## **T32412 - Instrumentation Division Business Meeting**

**3:30 pm - 5:00 pm**

**M100E, Convention Center**

Come join us at our annual Instrumentation Division Business Meeting. We will be reporting our division&apos;s activities for the past year and planning our events for the upcoming year. Our division&apos;s biennial elections will

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&#39;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 Guillemard (Dr.) (University of Puerto Rico, Mayaguez Campus)

Nayda G. Santiago (Professor) (University of Puerto Rico, Mayaguez Campus)

Aidsa 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**



# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Cijy Elizabeth Sunny (Dr) (Baylor University)  
Idalis Villanueva (Associate Professor)

## **Equipando Padres: Apoya el éxito de tu estudiante (Empowering parents to make a difference.)**

Dayna Lee Martínez (Director, Research & Innovation)  
Esther Gonzalez (Society of Hispanic Professional Engineers,  
Inc.)

## **Conocimientos and the borderlands of identity from Mexican American women in Engineering and Computer Science (Work in Progress)**

Norma Elizabeth Garza (The University of Texas at Arlington)  
Sarah Rodriguez (Associate Professor - Engineering Education)

## **Perceptions of low-income and academically talented students and mentors of [Program Name] - an S-STEM program at a Hispanic Serving Institution**

Aidsa I. Santiago-roman (University of Puerto Rico, Mayaguez  
Campus)  
Manuel A. Jimenez (Professor)  
Luisa Guillemard (Dr.) (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)

## **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)

Jennie LaMonte (Director) (Clemson University)

Aubrey Baldwin (Director of Student Engagement) (Clemson  
University)

### **Work in Progress: Facilitating a year-long research course sequence for undergraduate transfer students within a NSF S-STEM scholarship program**

Jiayun Shen (RA)  
LaToya McDonald (Clemson University)  
Marian S. Kennedy (Associate Professor)

### **Work-in-Progress: A Complementary Training Program in Control and Automation Engineering and its Role in Undergraduate / Master's Program Integration**

Karl Heinz Kienitz (Professor)  
Rubens Junqueira Magalhães Afonso (Assistant Professor)  
(Instituto Tecnológico de Aeronáutica)  
Wesley Oliveira (Professor) (Institute De Aeronautica Ita)  
Flávio Luiz Cardoso-Ribeiro (Institute De Aeronautica Ita)

## **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&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)

Nathan Case Hedgecock (Instructor, Systems Engineering)  
Skylar Franz (United States Military Academy)  
Morgan P Ernst (United States Military Academy)  
Mark Samuel Sallot (Cadet) (United States Military Academy)

## **Adapting through a Pandemic: Creating a Hands-On Mechatronics Laboratory with Team-Based Collaboration for Remote Learning**

Silverio Lopez  
Nicolas Gonzalo Perticari Pesci  
David Quintero

## **A Multi-Decade Response to the Call for Change**

Bart M Johnson (Vice President Academic and Student Affairs)  
Ronald Ulseth (Director)  
Michael Raich (President) (Itasca Community College)

## **T45320 - Panel to Assess the Impact of the COVID-19 Pandemic on Online Teaching Effectiveness**

**3:30 pm - 5:00 pm**

**102F, Convention Center**

**Speakers: Sandra Furterer, Lakshmy Mohandas, Eric Specking (Assistant Dean for Enrollment Management and Retention), Ekaterina Koromyslova (Associate Professor) (South Dakota State University), Philip Appiah-kubi**

With the COVID-19 pandemic, many universities shifted quickly to online learning. With many instructors only previously teaching in a physical classroom on campus, how effective was this online learning? This panel will discuss and assess the impact of COVID-19 on online teaching effectiveness. They will explore the current research on this topic area, the factors that contribute to online teaching effectiveness, and strategies instructors and students can incorporate into the online classroom to improve learning. This session will provide research-based insight into how to enhance online teaching effectiveness.

## **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)

## **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.

## **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 Humanitarian Engineering, Global Sociotechnical Competency, and Student Confidence: A Comparison of In-person, Virtual, and Hybrid Learning Environments. Rivera et al. 'Socially Distanced Community Engagement' -Teaching GIS Site-Analysis During COVID, Zarazaga et al. Engagement in Practice: Reflections on Remote Community Engaged Learning in the Context of a Multilateral International Partnership, Sours et al. Detecting Food Pantry Clients' Needs Post-COVID-19: A Project Design for Future Service-learning Course. Qiu, and Natarajarathinam

## **Humanitarian engineering, global sociotechnical competency, and student confidence: A comparison of in-person, virtual, and hybrid learning environments**

Angelina Nicole Rivera (Student Researcher)

Jessica Mary Smith (Professor)

Juan C. Lucena (Professor)

## **'Socially Distanced Community Engagement' -Teaching GIS Site-Analysis during COVID**

Jessie Marshall Zarazaga (Clinical Assoc. Professor, Sustainability & Development, SMU) (Southern Methodist University)

Cindy Hua

Janille A Smith-colin (Assistant Professor) (Southern Methodist University)

## **Engagement in Practice: Reflections on Remote Community-Engaged Learning in the Context of a Multilateral International Partnership**

Patrick Sours (Graduate Student) (The Ohio State University)

Howard L. Greene (Senior Project Manager) (The Ohio State University)

**Detecting food pantry clients' needs post-COVID-19: A project design for future service-learning courses**

Shaoping Qiu (Postdoc) (Texas A&M University)

Malini Natarajathinam (Associate Professor)

**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)

**T82538 - INDUSTRY DAY SESSION II - Tackling Climate Change Through Education, Research, and Industry Collaboration**

**3:30 pm - 5:00 pm**

101D, Convention Center

**Moderator:** Stephanie S. Harrington (Director of Constituent Relations) (ABET)

**Speakers:** Mary Gilliam (GM R&D), Lisa Kempler (MathWorks), Michael K. J. Milligan (Executive Director), Mark Smith (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 surrounding climate change.

**T86385 - New Engineering Educators Business Meeting**

**3:30 pm - 5:00 pm**

L100E, Convention Center

**Moderators:** Derek Breid, Rossana Villa Rojas (Assistant Professor of Practice)

**Speaker:** Ashish D Borgaonkar (Assistant Professor)

Business meeting for the NEE Division.

**T87415 - Ocean and Marine Engineering Division Business Meeting**

**3:30 pm - 5:00 pm**

M100D, Convention Center

Business Meeting for OMED

**T8812 - PCEE Insider: Writing and Reviewing P-12 Engineering Education Papers**

**3:30 pm - 5:00 pm**

102D, Convention Center

**Speakers:** Manuel Alejandro Figueroa (Associate

**Professor), Jamie R Gurganus (Faculty, Associate Director of Engineering Ed, Director of CIRT), Katey Shirey (edu-Katey STEAM Education)**

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)093: A Longitudinal Analysis of Pathways to Computing Careers: Defining Broadening Participation in Computing (BPC) Success with a Rearview Lens. (Mercy Jaiyeola).111: The Evolution of Multi-Site Combined REU/RET Program: From in Person to Virtual to Hybrid. (Hashmath Fatima)124: 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)

Institute and State University)

Avneet Hira (Assistant Professor) (Boston College)

### **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

## **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**

Stephanie S Ivey (Associate Dean for Research) (The University of Memphis)

Katie Marie Bowman (The University of Memphis)

## 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)

Jordan Crosby (University of Arkansas)

Raj R. Rao (Professor and Department Head, Biomedical Engineering) (University of Arkansas)

Mostafa Elsaadany (Assistant Professor)

## 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 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### **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)

## **T642 - Biological and Agricultural Engineering Division Business**

**3:30 pm - 5:00 pm**

**L100B, Convention Center**

## **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.

# 2022 ASEE ANNUAL CONFERENCE TUESDAY, JUNE 28<sup>th</sup> SESSIONS

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## **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!

## **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/h7Mh35S8JLC6RgvV8>

## **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.

## **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.

## **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

# 2022 ASEE ANNUAL CONFERENCE

## TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

listserv

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](mailto: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.



# 2022 ASEE ANNUAL CONFERENCE

## TUESDAY, JUNE 28<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

### T37550 - Materials Division Social

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7:00 pm - 9:00 pm

Lakes & Legends Brewing Company; 1368 Lasalle Ave. Minneapolis, MN 55403

### T19346 - Engineering Design Graphics Division Social

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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

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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

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7:00 pm - 9:00 pm

M100FG, Convention Center

CED Business Meeting

### T82541 - Institutional Council Reception (by Invitation Only)

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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

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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

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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.

# 2022 ASEE ANNUAL CONFERENCE WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

## 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 two-fold: 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

## 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)

## 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)

## 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))

# 2022 ASEE ANNUAL CONFERENCE

## WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

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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 Khlal (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>.

## **W291101 - DEED Technical Session 7 Design Mental Frameworks**

**8:00 am - 9:30 am**

**212, Convention Center**

**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 Mobaraki-omoumi

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)

### **Surfacing Students Design Problem Understanding through System Mapping: A Novice-Expert Comparison**

Corey T Schimpf (Assistant Professor)

Andrew Olewnik (Assistant Professor)

### **Assessing Engineering Sketching Skills on Object Assembly Tasks**

Hillary Merzdorf

Donna Jaison

Morgan Weaver (Graduate Research Assistant) (Georgia Institute of Technology)

Kerrie A Douglas (Assistant Professor of Engineering Education)

Julie S Linsey (Professor)

Tracy Anne Hammond (Professor)

## **W29174 - 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 WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

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at Raleigh)

Amanda Mills (North Carolina State University at Raleigh)

Yan Shen (Instructional Designer) (North Carolina State University at Raleigh)

Jesse S. Jur (Assistant Professor) (North Carolina State University at Raleigh)

## **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 SESSION: What eResources Would Help Your Students Learn Mechanics? Presented by McGraw Hill**

**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? 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

## **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

### Undergraduate Design Event Due to COVID-19

Rania Al-hammoud (Dr.)

Reza Abolhelm (University of Waterloo)

Trevor D Hrynyk

## 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

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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:094: An Analysis of Differences in Behaviors and Practices of Security-conscious Users and Regular Users on Mobile Devices. (Stephen Mujeye)100: A Metro Map-Based Curriculum Visualization for Examining Interrelated Curricula. (Tamara Nelson-Fromm)108: Programmable Network-based Hands-on Course Projects. (Xiong Wang)115: Introducing Deep Learning on Edge Devices Using a Line Follower Robot. (Bassam Alshammari)

**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

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Trenton Drake Allison  
Jacob D Brennon (Pittsburg State University)  
Caleb Chase (Pittsburg State University)  
Brandon Andre Kincheloe (Pittsburg State University)  
Donna Lenharth (Lecturer) (Pittsburg State University)  
Kailash Chandra (Professor) (Pittsburg State University)

## **[Work in Progress]Programmable Network-based Hands-on Course Projects**

Xiong Wang (Dr)  
Jing Ren  
Shizhong Xu

## **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 (SFAz 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

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Texas at El Paso)

## **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)

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)

## **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!

### **Student competency, autonomy, and relatedness in a practice-oriented engineering program: An application of self-determination theory**

Bethany Popelish (James Madison University)

Tobias Reynolds-Tylus (James Madison University)

Melissa Aleman

Robert L. Nagel

### **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**

## **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 29<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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**

### **Evaluating Spatial Visualization Learning Through Digitized Sketches: A Case Study of Engineering Students' and Orthographic Projection Errors**

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)



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### 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  
Mehrupe Mehrupeoglu (Professor) (Texas A&M University - Corpus Christi)  
G. Beate Zimmer (Associate Professor) (Texas A&M University - Corpus Christi)

University - Corpus Christi)

### Control Systems Laboratory for Hands-on Remote Learning at Scale

Clark Hochgraf (Associate Professor) (Rochester Institute of Technology (CET))

## 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

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## **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 Seats (Professor of the Practice) (Texas A&M University)

Karan Watson (Provost Emeritus & Sr. Professor) (Texas A&M University)

Arun Srinivasa

## **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 Seats (Professor of the Practice) (Texas A&M University)

Mindy Bergman

Arun Srinivasa

## **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)

## **W22884 - First-Year Programs Division Technical Session 2: Peer Mentoring/Learning, Teaching Assistants, and Career Mentorship**

**8:00 am - 9:30 am**

**202, Convention Center**

**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)

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## **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 Twyman (Instructor)  
Matthew James (Associate Professor of Practice)  
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&M University)  
Renee 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 & 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), Taiyler Rayford, David Tomblin (Director/Senior Lecturer) (University of Maryland College Park)**

## **Educational Enrichment: The Benefits of Near-Peer Mentoring for Undergraduate Engineering Students**

Taiyler Rayford  
Nidia Ruedas-Gracia (Assistant Professor) (University of

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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

## **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**

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

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Dallas R Trinkle (Associate Professor of Materials Science and Engineering) (University of Illinois at Urbana - Champaign)

Pinshane Huang (University of Illinois at Urbana - Champaign)

Cecilia Leal

### **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)

## **W239113 - Mechanical Engineering: Online Education**

**8:00 am - 9:30 am**

**200B, Convention Center**

**Speaker: Rebecca R Romatoski (Assistant Professor) (St. Ambrose University)**

### **IN-PERSON INSTRUCTION OR REMOTE LEARNING?: UNDERSTANDING STUDENTS' LEARNING EXPERIENCES DURING COVID-19**

Eleazar Marquez (Dr.) (The University of Texas Rio Grande Valley)

### **Reflecting while doing: Integrating active learning and metacognitive activities in a fully online thermodynamics course**

Andrea Gregg (Director of Online Pedagogy) (Pennsylvania State University)

Jacqueline O'Connor (Pennsylvania State University)

### **Using Arduino Kits and Discord to Implement A Fully Remote Laboratory Course During the COVID-19 Pandemic**

TseHuai Wu (University of Maryland Baltimore County)

Foad Hamidi (Dr.) (University of Maryland Baltimore County)

### **Teach online controls laboratory using a low-cost temperature control lab hardware**

Bo Yu

### **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**

**Moderators: Christopher Alexander Carr (Associate Dean & Chief Diversity Officer) (George Mason University), Vemitra White Alexander (NASA Education Specialist)**

**Speaker: Blanca Rincon**

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



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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)

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### **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' Connection 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)

with currently funded NSF projects in engineering education and closely related topics. Programs represented in this session include: CAREER Revolutionizing Engineering Departments (RED) Professional Formation of Engineers: Research Initiation in Engineering Formation (PFE: RIEF) Research Experience for Undergraduates (REU) Advanced Technological Education (ATE) and others. NSF Grantees Poster Board Assignments

### **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 MG 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

## **W44506 - NSF Grantees Poster Session**

**9:45 am - 11:15 am**

**Exhibit Hall B & C, Convention Center**

This poster session highlights work conducted by investigators

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## **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.)  
Melissa 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)

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## **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. Parette (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)  
Amarnath Banerjee (Associate Professor) (Texas A&M University)  
Glen Miller

## **The Synergy of Intertwining Grant Activities: Cyber Up! and**

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## **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'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 Wosczyzna-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 Kim (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 Scalero (Graduate Student)

Ann-Marie Vollstedt (Teaching Assistant Professor) (University of Nevada, Reno)

Adam Kim (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 servingness**

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 Guillemard (Dr.) (University of Puerto Rico, Mayaguez Campus)

## **Encouraging Underrepresented and Entrepreneurial-Minded Postdocs in High-Tech Startups**

Rachel Levitin (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)

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JoAna Brooks (California State University, Chico)

## **Supporting Convergence Development through Structural Changes to an ECE Program**

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 # 2044472 "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 Baghdadchi (Teaching Professor)

Alex M Phan (University of California, San Diego)

Celeste Pilegard (University of California, San Diego)

Nathan Delson (Professor)

## **Developing Sustainable and Continuing Practices for Diversity and Inclusion in a Civil and Environmental Engineering Department**

Tiago Forin

Stephanie Lezotte (Assistant Dean) (Rowan University)

Adriana C Trias Blanco (Assistant Professor) (Rowan University)

Theresa Fs Bruckerhoff (Project Evaluator)

## **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. Lamerer (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

## **WIP - Creating, Living & Sustaining Partnerships between Community Colleges and B.S.-Granting Colleges of Engineering: Theory, Tools & Practices**

Jane L. Lehr (Professor)

Dominic J Dal Bello (Professor)

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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 & 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, Ogonz Campus)

Amy L. Freeman (Director, Millennium Scholars Program) (Pennsylvania State University)

Tonya Peebles

## **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)

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### **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&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

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## **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 WRI2TES Project: Writing Research Initiating Identity Transformation in Engineering Students**

Royce Francis (Associate Professor)  
Marie C. Parette (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)



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University)

Wendy Barnard

### **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. Parette (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 Minichiello (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

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### **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

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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

Jillian 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 Collopy (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 &)

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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 Mccord 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

Sunghwan Lee (Assistant Professor) (Purdue University at West Lafayette (PPI))

## **S-STEM First Year Progress: Baylor Engineering and Computer Science Scholars' 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)

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Keren Mabisi

### **Changing Homework Achievement with Mechanics 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)

### **Three Years of the Urban STEM Collaboratory**

Maryam Darbeheshti (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

### **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

### **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)

Christopher Griffin

Scott Leutenegger

Ronald R. Delyser (Associate Professor Emeritus)

Anne Marie Aramati Casper (Dr)

### **Advancing Student Success Through Integrated Sociocultural and Academic Intervention Strategies**

Sudarshan Kurwadkar  
Jidong Huang (Dr.) (California State University, Fullerton)  
Salvador Mayoral (Associate Professor) (California State University, Fullerton)

### **Promoting pedagogical change around writing: Observations of discursive turbulence**

Ryan Ware  
Megan Elizabeth Mericle  
Paul Prior  
John R Gallagher (Assistant Professor) (University of Illinois at Urbana - Champaign)  
John Popovics  
Celia Mathews Elliott (Director, External Affairs) (University of Illinois at Urbana - Champaign)  
Lance Cooper (Associate Head for Graduate Programs)  
Julie L Zilles (Research Assistant Professor) (University of Illinois at Urbana - Champaign)

### **Early lessons learned from pivoting an REU program to a virtual format**

Dan DeVescovo  
Darlene Groomes (Oakland University)  
Laila Guessous (Professor of Engineering) (Oakland University)

### **Nanotechnology Experiences for Teachers and Students, Student Experiences and Outcomes**

Brandon Sorge (Associate Professor of STEM Education Research)  
Grant Fore (Research Associate) (Indiana University - Purdue University Indianapolis)  
Mangilal Agarwal

### **Empowering Students to be Adaptive Decision-Makers: Bringing it All Together**

Marisa K. Orr (Associate Professor)  
Haleh Barmaki Brotherton (PhD student)  
Baker Martin  
Jessica Allison Manning (Graduate Research Assistant)  
Katherine Marie Ehlert

### **Anti-Racism Practice in Engineering: Exploring, Learning & Solutions (ARPELS)**



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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

Cayla 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 Rodríguez (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)

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## **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 Sekaquptewa (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 Warter-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)

Emily Allen

## **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**

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## 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 Mobley (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

Jungsun 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)

Jenifer Blacklock (Director of the Western Colorado University Partnership Program) (University of Colorado Boulder)

Barbara M. Moskal (Professor) (Colorado School of Mines)

Janet Y Tsai (Assistant Teaching Professor)

Natalie Plata (Colorado School of Mines)

## 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

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## **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)  
Oluwafemi 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 Wosczyzna-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-ceylan

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**

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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 Rieggle-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 & 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 Wosczyzna-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 & 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 Asgarpour (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

## W75699 - ETC Board of Directors Meeting

9:45 am - 11:15 pm

M100B, Convention Center

## 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 Hussein (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'Neill

### Impact of lab experiences on student knowledge and confidence

Eileen Haase (Senior Lecturer) (The Johns Hopkins University)

Natsuki Furukawa (The Johns Hopkins University)

Brooke Carolanne Hardesty (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)

## W36409 - ASEE Manufacturing Division Business Meeting

11:30 am - 1:00 pm

M100FG, Convention Center

Business meeting to discuss division updates and planning for the 2023 conference.

## W380 - Experimentation and Laboratory-Oriented Studies Business Meeting

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**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

## **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**

**11:30 am - 1:00 pm**

**M100C, Convention Center**

**Speaker: Julian Ly Davis (Dr.)**

The Mechanics Division executive committee will report on their work in the past year. In addition, elections will be held for positions on the executive committee and various other committees. Come and get involved! Become a Mechanics member and join the fun in the Mechanics Division!

## **W30128 - Computers in Education 11 - Modulus 3**

**11:30 am - 1:00 pm**

**206, Convention Center**

**Moderator: Joshua Chibuike Nwokeji (Associate Professor) (Gannon University)**

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.

**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)

**Work In Progress: Side-Facing Cameras and Remote Proctoring Integrity**

Patriel Stapleton (University of Florida)

Jeremiah J Blanchard (Assistant Instructional Professor)

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### 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. Wiitabla (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. Wiitabla (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)

### W12423 - Software Engineering Business Meeting

11:30 am - 1:00 pm

M100A, Convention Center

Business meeting for the Software Engineering Division of ASEE

### 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)

## 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 Pflueger (Director) (Pennsylvania State University, Behrend College)  
Robert Weissbach

### Engineering Communication in ASEE 2000-2020: A Historical Approach to Defining a Collective Enterprise

Kathryn A. Neeley (Associate Professor) (University of Virginia)  
Michael Alley (Professor of Teaching) (Pennsylvania State University)

## 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

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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.

### ETC Business Meeting and Best Paper Awards Luncheon

11:30 am - 1:00 pm

L100D, 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 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.

### 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) 105: High-Impact Practices in LEAP: an NSF S-STEM Scholarship Program. (Afsaneh Minaie) 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



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Yosi Shibberu (Professor) (Rose-Hulman Institute of Technology)

## High Impact Practices in LEAP: an NSF S-STEM Scholarship Program

Afsaneh Minaie

Reza Sanati-mehrizi (Professor) (Utah Valley University)

Janis P Raje (Technical Writer)

## Building a model of polymorphism comprehension

Joshua Gross

Kevin Coogan

Sarah Heckman (Teaching Professor) (North Carolina State University at Raleigh)

Gabriel Silva de Oliveira (Research Assistant) (North Carolina State University at Raleigh)

## W85455 - ETD - STEM Issues in ET I

11:30 am - 1:00 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.)

## Lessons Learned from Teaching Engineering Classes Online during COVID-19

Talal D. Gamadi

Marshall Watson (Professor & Chair) (Texas Tech University)

## Virtual Problem-Based-Learning Instruction in the Era of the COVID-19 Pandemic – What Could Possibly Go Wrong & What Can One Do About It?

Austin B. Asgill (Professor) (Kennesaw State University)

Cyril B Okhio (Engineering Professor)

## Impact of COVID-19 on Capstone Projects Outcomes

Asif Ahmed (Assistant Professor)

## The Impact of COVID19 on Students' Learning Outcomes in a Thermodynamics Course

Khalid Zouhri (Assistant Professor)

Philip Appiah-kubi

Kayla Nulph

## 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

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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

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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)**

“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, reverend, and activist Dr. Martin Luther King, Jr. while sitting in a Birmingham city jail in 1963. His righteous indignation was on full display as he felt frustrated that the white people who expressed sympathy with his pursuit of justice were more a hindrance to his efforts than the white people who were ardently against justice for Black people. King’s words resonate with me almost 60 years later, though our current circumstance is not entirely analogous. Today, my efforts, and those of many Black friends and colleagues, to actualize racial equity in engineering education are constrained greatly by our “well-intentioned” and sympathetic colleagues.

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.

### **W75661 - DISTINGUISHED LECTURE: 2021 Best PIC and Zone Papers**

**1:45 pm - 3:15 pm**

**208, Convention Center**

2021 Best PIC and Zone Papers Please note: Best Overall PIC Paper and Best Overall Zone Paper will be featured at the Tuesday Plenary. 2021 BEST PIC II PAPER Title : 2021 BEST PIC II PAPER WINNER: Scaling Hands-On Learning Principles in Manufacturing through Augmented Reality Disassembly and Inspection of a Consumer Product Authors: Ms. Dan Li, Massachusetts Institute of Technology; A. John Hart; Dr. John Liu, Massachusetts Institute of Technology 2021 BEST PIC III PAPER Title : 2021 BEST PIC III PAPER WINNER: Engage AI: Leveraging video analytics for instructor-class awareness in virtual classroom settings Authors: Jeremy Stairs, University of Toronto; Raman Mangla; Manik Chaudhery; Janpreet Singh Chandhok; Hamid S Timorabadi, University of Toronto 2021 BEST PIC IV PAPER Title : 2021 BEST PIC IV PAPER WINNER: Exploring the Relationships between Acculturation Attitudes and Demographic Characteristics in Engineering Workplaces Authors: Rohini Abhyankar, Arizona State University; Samantha Ruth Brunhaver, Arizona State University, Polytechnic Campus 2021 BEST PIC V PAPER Title : 2021 BEST PIC V PAPER WINNER: Teaching in the Era of Covid 19 - A Reinvented Course Project for an Ocean Engineering Course Authors: Maija A Benitz, Roger Williams University 2021 BEST ZONE II PAPER Title : 2021 BEST ZONE II PAPER WINNER: Team formation in the ECE Capstone course and studying impact Author: Greg A. Dunko 2021 BEST ZONE III PAPER Title : 2021 BEST ZONE III PAPER WINNER: Correlation of Student Participation in Practice Exams and Actual Exam Performance Authors: Dr. Antonette T. Cummings P.E., University of Wisconsin 2021 BEST ZONE IV PAPER Title : 2021 BEST ZONE IV PAPER WINNER: Investigating Student Perceptions of Team-based



# 2022 ASEE ANNUAL CONFERENCE

## WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

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 Egwuonwu (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



# 2022 ASEE ANNUAL CONFERENCE WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

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**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:** Introductions - 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)

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

Interested in how students can better learn to solve problems or how to improve student conceptual understanding? Then this is the session for you!

**Work in Progress: Understanding CS1 Students' Code Comprehension Behaviors using Multi-modal Data**

FNU Rakhi

Syedah Zahra Atiq (Assistant Professor of Practice)

**Work in Progress: Exploring Students' Misconceptions of Cache Memories**

Muhammad Suleman Mahmood (University of Illinois at Urbana - Champaign)

Hongxuan Chen (University of Illinois at Urbana - Champaign)

Morgan M Fong

Geoffrey L Herman (Teaching Associate Professor)

**Using Post-Assessment Reflection to Enhance Student Learning Outcomes in a Fluid Mechanics Course**

Boni Frances Yraguen (PhD Student)

Anna K Lummus (Georgia Institute of Technology)

Hannia Elisa Koolman (Georgia Institute of Technology)

Roxanne Moore

Katherine Fu (Assistant Professor)

**(Work in Progress) Associations of Problem-Solving Strategy Use, Metacognition, Confidence, and Performance in a Senior Engineering Review Course**

Roman Taraban (Professor)

Sheima Khatib (Texas Tech University)

Jacob Vaughn (Texas Tech University)

**Investigating the Transferability of the Productive Beginnings of Engineering Judgment Framework from Statics to Dynamics**

Jessica Swenson

Max Magee

Aaron W. Johnson (Assistant Professor)

**Characterization of Problem Types in Engineering Textbooks**

David J Therriault (Ph. D.)

Elliot P. Douglas (Professor)

Emily Buten

Elizabeth Bates

Jeremy A. Magruder Waisome (Instructional Assistant 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)

Craig Altmann

Jon-michael Hardin (Department Head) (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)

Jianhong Ren (Professor) (Texas A&M University - Kingsville)

Maríee 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

# 2022 ASEE ANNUAL CONFERENCE WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

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**[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

We will have an informal conversation about conference takeaways. A great time to network at the end of the conference to make plans to keep conversations going.

## W28429 - FYEE Steering Committee Meeting

3:30 pm - 5:00 pm

M100B, Convention Center

This meeting is for members of the First-Year Engineering Experience (FYEE) conference steering committee.

## W35154 - LEES 7: Experiments in Experiential and Project-Based Learning

3:30 pm - 5:00 pm

200D, Convention Center

Moderator: George Chatzimavroudis (Associate Dean)

(Cleveland State University)

Speakers: Joanna G Burchfield, Megan Kenny Feister (Assistant Professor), Yi Cao

## 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

Speakers: Todd Nicewonger, Franz Thomas Newland (Associate Professor) (York University), Laura Kasson Fiss (Research Assistant Professor) (Michigan Technological University), Erin Cech

## 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)  
Darnishia 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)

# 2022 ASEE ANNUAL CONFERENCE WEDNESDAY, JUNE 29<sup>th</sup> SESSIONS

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Lisa D. McNair (Professor)

## **Does Public Welfare Responsibility Training in Engineering Education Shape Engineering Professionals' Reasoning about Ethical Issues?**

Erin Cech

Cynthia J. Finelli (Professor)

Elana Goldenkoff (University of Michigan)

Teanne Davis (University of Michigan)

## **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 Melauchlan (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.

## W589 - SPONSOR TECH SESSION 1 (TBD)

3:30 pm - 5:00 pm

101B, Convention Center

## W592 - SPONSOR TECH SESSION 4 (TBD)

3:30 pm - 5:00 pm

101A, Convention Center

## W6274 - Open Mic: Chemical Engineering Division

3:30 pm - 5:00 pm

Lakeshore B, Hyatt Regency

## 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 Pattaje 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)

# 2022 ASEE ANNUAL CONFERENCE

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ALL SESSIONS ARE CENTRAL DAYLIGHT TIME

Karin Becker

Timothy Frank (Assistant Professor ) (United States Air Force Academy)

BY INVITATION ONLY Friends and Family Reception  
hosted by President-Elect Jenna Carpenter

### W84302 - Engineering Physics and Physics Division Business

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3:30 pm - 5:00 pm

M100FG, Convention Center

### W675762 - ASEE Program Chair Appreciation Happy Hour (By Invite Only)

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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)

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7:30 pm - 9:00 pm

Northwoods, Hyatt Regency



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