



ANDERSON  
UNIVERSITY

# 2022 ASEE IL-IN Section Conference

April 9, 2022

Anderson, IN



AMERICAN SOCIETY FOR  
ENGINEERING EDUCATION

## **SCHEDULE AT A GLANCE**

<b>8:30-8:45 AM</b>	Welcome
<b>8:45-9:00 AM</b>	Break
<b>9:00-10:15 AM</b>	Session 1 (Paper Sessions 1 & 2, Poster Session 1)
<b>10:15-10:30 AM</b>	Break
<b>10:30-11:45 AM</b>	Session 2 (Paper Sessions 3 & 4, Poster Session 2)
<b>11:45 AM-12:45 PM</b>	Lunch and Networking Time
<b>12:45 PM-1:15 PM</b>	Section Business Meeting
<b>1:15-2:30 PM</b>	Session 3 (Paper Session 5, Workshop)
<b>2:30-2:45 PM</b>	Break
<b>2:45-4:00 PM</b>	Keynote and Awards

## **DETAILED SCHEDULE**

### **WELCOME 8:30-8:45 AM**

Location: HARTUNG 101

Hosts: Dr. Benjamin McPheron, Conference Chair  
John Brocato, ASEE ZONE II Chair

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### **FIRST SESSION 9:00-10:15 AM**

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#### **Paper Session 1: Assessment, Retention, and Curriculum**

Location: HARTUNG 101

Session Chair: Dr. Benjamin McPheron, bdmcpheron@anderson.edu

- 9:00-9:15 AM Correlation Between the Course Knowledge Survey Results and Student Performance in a Civil Engineering Course  
Suresh Immanuel (*University of Evansville*)
- 9:15-9:30 AM Visualizing Student Calibration by Developing Tag-Enhanced Open Learner Models: Towards Self-Regulated Learning  
Suneer Angra, Drashti Sikligar, Colin Widmer Castleberry, Jennifer R Amos (*University of Illinois at Urbana-Champaign*)
- 9:30-9:45 AM Work-in-Progress: Individual Capstone Assessment Using Z-Scores  
M. Austin Creasy (*Purdue University at West Lafayette (PPI)*)
- 9:45-10:00 AM Machine Learning: An Undergraduate Engineering Course  
Sami Khorbotly (*Valparaiso University*)
- 10:00-10:15 AM Work-In-Progress: Applying Peer Mentorship in a First Year Engineering Course to Improve Student Learning and Retention Outcomes  
Benjamin D. McPheron (*Anderson University*)

#### **Paper Session 2: STEM Outreach and Engineering Ethics**

Location: HARTUNG 321

Session Chair: Dr. Courtney Taylor, cktaylor@anderson.edu

- 9:00-9:15 AM Coding Camp for Middle School Girls Helps Improve Awareness of Science/Engineering Careers and Pathways  
Pranav Bhounsule (*The University of Illinois at Chicago*), Cynthia Lima (*University of Texas at San Antonio*)
- 9:15-9:30 AM STEM engagement for middle and high school girls- Implementation,

## Challenges and Lessons learned

Rashmi Deodeshmukh, Andrea Fay Barber-Dansby (*Purdue University at West Lafayette*)

- 9:30-9:45 AM      Work in Progress: Development and Implementation of an After-school STEM Curriculum for Kindergarten to 4th Grade Students at Girls Inc. through the “Cummins Powers Women” Initiative  
Anand Nageswaran Bharath, Archana K. Kulkarni, Dinesh Balaji Ramaraj, Jennifer M. Thomasson (*Cummins Engine Company*), Alexa Davis (*Girls Inc.*), Demario Robinson , Malavika Panicker, Elizabeth A. Spratt , Tina Henselmeier, Nora Guzman, Arul Antony, Sonya Ware-Meguiar (*Girls Inc.*), Danielle Fawbush , Daniel J. O'Connor , Kenneth Francis , Jennifer G. Warrenburg (*Cummins Engine Company*)
- 9:45-10:00 AM      A systematized literature review of scholarship on ethical development and perspective-taking in engineering students  
Brooks Michael Leftwich, (*Purdue University at West Lafayette (PPI)*)

## Poster Session 1

Location:            HARTUNG 1st Floor Hallway  
Session Chair:      Dr. Caroline Baker, cebaker@anderson.edu

- Board 1:            Iterative Design of A Biofeedback Device to Reteach Healthy Walking Habits in Patients with Loss of Feeling  
George D. Ricco, Megan Hammond, Joseph B Herzog, Paul Talaga, Joan Matutes, David Anthony Tucker (*University of Indianapolis*)
- Board 2:            The Design of Magnetic Drill Breakaway Force Tester  
Jacob Michael Rohrig, James T Emery, Hunter Craig Goodwin, Autumn Yvonne Hotopp, George D. Ricco (*University of Indianapolis*)
- Board 3:            Milwaukee Tool Image Capture Process  
Najmus Saqib, Suranga Dharmarathne, David Julia, Evan Weakley, James T Emery, George D. Ricco, Megan Hammond (*University of Indianapolis*)
- Board 4:            The Design of a Swim Training Device That Measures the Power Output by The Swimmer  
Md Munirul Haque, George D. Ricco (*University of Indianapolis*)
- Board 5:            An Interactive Trivia Station  
Mohammad Shokrolah Shirazi, Joan Martinez, Shelby Hacker, George D. Ricco, (*University of Indianapolis*)
- Board 6:            Modular Power Supply

Teangelo Rayner, Megan Marshall, Noah Christian McBride, Seth Ward,  
Nicholas Emery (*University of Indianapolis*)

- Board 7: Package Theft Protection Box  
Jonathon David Magos, Silas Spencer Ratliff, Allie Ilisa McClure, Thomas Robert Crowel, Mayron Reyes Esposito (*University of Indianapolis*)
- Board 8: Ergonomic Assisted Walker to Assist Patients with Limited Mobility  
Bo D Minor, Alyssa Ruder-Wasylo, Sean M Werling, Tyson Burton, Derek Elam, Md Rashedul Hasan Sarker, David Olawale, Megan Hammond (*University of Indianapolis*)
- Board 9: Combining Design and Entrepreneurial Mindset Development: Modular Roof Rack System  
Sulman Tariq, Joseph St. Clair Glassmeyer, Jared Hamilton, Tyler J Nolan, David Lee Hout, Kendra Marie Seymour (*University of Indianapolis*)
- Board 10: Work-In-Progress: Team 13.4 Automated Microphone Positioning System  
Alexander Quinn Ruble, Bill Faton, Zachery E Clark, Tyce Taylor, Sebastian Wenk (*University of Indianapolis*)
- Board 11: Design and Development of Competitive Combat Robot  
Nate D Comley, Dalton Blake Lowry, Elliot Motato, Anthony Williamson, Samuel Kent Schoonveld, Shaelyn Starks, Najmus Saqib, Joseph B Herzog (*University of Indianapolis*)

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#### **BREAK 10:15-10:30 AM**

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#### **SECOND SESSION 10:30-11:45 AM**

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#### **Paper Session 3: Pedagogy**

Location: HARTUNG 101

Session Chair: Dr. Matthew Preston, [mspreston@anderson.edu](mailto:mspreston@anderson.edu)

10:30-10:45 AM Metrology Education including GD&T in Engineering Technology  
Joseph P. Fuehne (*Purdue University at West Lafayette (PPI)*)

10:45-11:00 AM A Collaborative Model of Teaching and Learning for Undergraduate

Innovation Education

Jackson Otto, Greg J. Strimel, Sherylyn Briller, Todd Kelley (*Purdue University*)

11:00-11:15 AM      Use of POGIL Methodology in Undergraduate Mechanical Engineering Courses

Jeffrey Phillips (*Hanover College*)

11:15-11:30 AM      Flipping the Heat Transfer Classroom

Jessica Lofton (*University of Evansville*)

#### **Paper Session 4: Labs and Experiential Learning**

Location:              HARTUNG 321

Session Chair:        Dr. Scott Kennedy, sbkennedy@anderson.edu

10:30-10:45 AM      Forced Convection over a Cylindrical Heating Element: Air Flow along the Surface of a Solid Cylinder

Isaac Louis Ball (*Hanover College*)

10:45-11:00 AM      The Development of a Hands-on Impact Testing Lab/Mini-Project in the Context of Machine Component Design

David C. Che (*Indiana Wesleyan University*)

11:00-11:15 AM      Design of Project-based Labs for Internet of Things Applications

Hongli Luo (*Purdue University Fort Wayne*)

11:15-11:30 AM      Manufacturing a DC Power Supply with Internet of Things (IoT) Control Dashboard for Embedded Systems Education

Tom M. Lucas, Jackson Douglas Couch, Ian Kendrick Darst, Elliot Andrew Eickholtz, Caleb Griffith, Adam T. Mabe, Jacob Dylan Marrs, Samuel David Mattingly, Alexander W. Ramsey (*Purdue University*)

11:30-11:45 AM      Utilizing a CMM in a Capstone Design Project to Learn Manufacturing Quality Concepts

Joseph P. Fuehne (*Purdue University at West Lafayette (PPI)*)

#### **Poster Session 2**

Location:              HARTUNG 1st Floor Hallway

Session Chair:        Dr. Courtney Taylor, cktaylor@anderson.edu

Board 1:                Integrating Model-Based Systems Engineering Curriculum into Engineering Courses

Leonardo Pollettini Marcos, Kerrie A Douglas, Tiantian Li, Wanju Huang, Andrew Hurt, C Robert Kenley (*Purdue University*)

Board 2:                Experiences and Lessons Learned in Applying Project Based Learning in

Data Structures and Algorithms

Ayat Hatem (*California State University Stanislaus*), Jacqueline M Jackson (*Jackson State University*), Lila Ghemri (*Texas Southern University*)

- Board 3: Enumeration of Root Sequences for Polynomials of Degree Six  
Courtney Taylor, Hannah Stockwell, Megan Elizabeth Moran  
(*Anderson University*)
- Board 4: Equipping Biomedical Engineering Students with Design Skills through  
Healthcare Makerspace Experiences  
Katelyn Murphy, Ashtin Wilson (*IUPUI*)
- Board 5: Infrastructure Myths - Students Fine Information on WWW  
David P Devine (*Cleveland State University*)
- Board 6: Journal Citation Analysis  
Anna Ren (*Northwestern University*)
- Board 7: Innate Desire to Know and Explore Helps Learning in Engineering  
Education  
Tumkor Serdar (*University of Pittsburgh at Johnstown*)
- Board 8: Office Hours System: A Web Application to Connect University Faculty  
and Students  
Annalie Cisar (*University of Indianapolis*)
- Board 9: Pose Identification and Classification System  
Benjamin Rader, Meredith Magee, Chijioke Ezeani (*University of Indianapolis*)
- Board 10: DigIndy Screen Cleaning System  
Damla Silahyurekli (*University of Indianapolis*)

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**LUNCH 11:45 AM-12:45 PM**

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**IL-IN SECTION BUSINESS MEETING IMMEDIATELY TO FOLLOW LUNCH 12:45-1:15 PM**

Location: HARTUNG 101

Host: Pat Fox, ASEE IL-IN Section Chair

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### THIRD SESSION 1:15-2:30 PM

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#### Workshop

Location: HARTUNG 101

Session Chair: Dr. Benjamin McPheron, [bdmcpferon@anderson.edu](mailto:bdmcpferon@anderson.edu)

Improving Teamwork and Learning in Lab and Design Courses  
Rebecca Reck, Katie Ansell, Holly Golecki, Chandrasekhar  
Radhakrishnan, Christopher Schmitz, Jessica TerBush (*University of  
Illinois Urbana-Champaign*)

#### Paper Session 5: COVID Challenges, REUs and Graduate Programs

Location: HARTUNG 321

Session Chair: Dr. Scott Kennedy, [sbkennedy@anderson.edu](mailto:sbkennedy@anderson.edu)

1:15-1:30 PM      Application of Metaverse as an Immersive Teaching Tool in Engineering  
Technology Classrooms  
Vajih Khan, Iftekhar Ibne Basith, Michelle Boyd (*Sam Houston State  
University*)

1:30-1:45 PM      Promoting quality STEM Education in the time of Social Distancing  
Marcelo Caplan (*Columbia College*)

1:45-2:00 PM      Post CoVID-19 Challenges and Solution for Engineering Technology  
Recruiting and Outreach  
Iftekhar Ibne Basith, Vajih Khan, Michelle Boyd (*Sam Houston State  
University*)

2:00-2:15 PM      Work in Progress: Effectiveness of an REU SITE at Preparing Students  
for Graduate School  
La'Tonia Stiner-Jones (*The Ohio State University*)

2:15-2:30 PM      Motivation and Impact of Diverse Student Teams in Graduate Projects  
Shantanu Gupta, Mary E. Johnson, Jiansen Wang (*Purdue University*)

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#### KEYNOTE AND AWARDS 2:45-4:00 PM

Location: HARTUNG 101

Host: Dr. Benjamin McPheron, Conference Chair

Speakers: John Brocato, *ASEE Zone II Chair*



Dr. Sheryl Sorby, *ASEE Immediate Past President*

Dr. Ruth Wertz, *2021 ASEE IL-IN Section Outstanding Teacher Award Winner*

Awards: Best Paper, 2022 Outstanding Teacher, 2022 Outstanding Campus  
Representative

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## Location Maps

Paper and Poster Sessions are Located in Hartung Hall, Anderson University. Lunch will take place in the Marketplace (Olt Student Center). If you have interest in seeing the Engineering Center, ask a conference committee member!

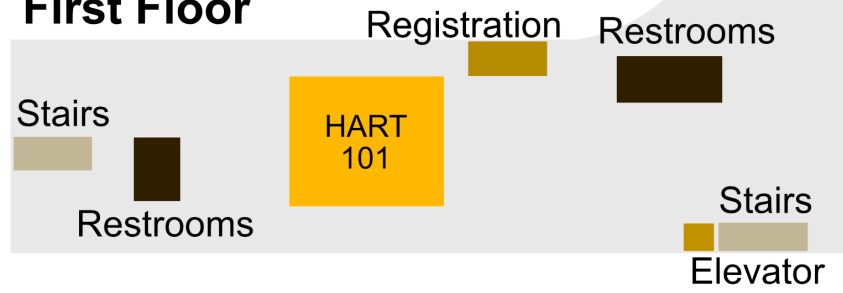
See the map below for parking and campus locations. There is also an interior map of Hartung Hall for convenience in locating session locations, access, registration and restrooms. Poster sessions will take place in the hallways of the east side of Hartung Hall.



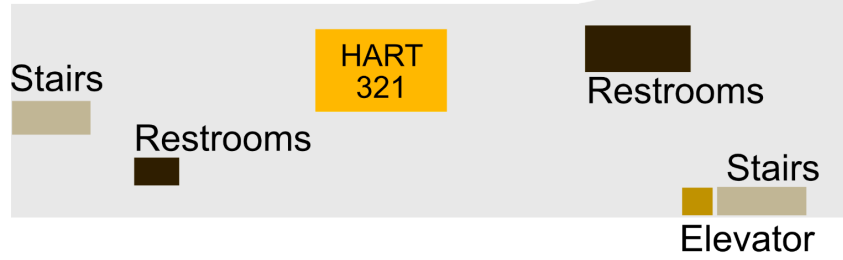
Helios  
Fountain



## First Floor



## Third Floor



## Speaker Biographies

### **John Brocato** *ASEE Zone II Chair*



ASEE Zone II Chair John Brocato is a Technical Communication Lecturer in the School of Chemical, Materials, and Biomedical Engineering at the University of Georgia and also serves as the university's ASEE Campus Representative. Prior to this role, he was the coordinator of and an instructor in the Shackouls Technical Communication Program in the James Worth Bagley College of Engineering at Mississippi State University where he taught engineering communication to both undergraduate and graduate students. An ASEE Fellow, John has published on engineering-communication pedagogy for over 15 years. He has held multiple ASEE leadership roles at the national and section levels, including President of the Southeastern Section. He currently serves as the Southeastern Section Proceedings Editor, and he was Mississippi State's longtime ASEE Campus Representative, a service for which he won numerous ASEE awards.

### **Dr. Sheryl Sorby** *ASEE Immediate Past President*



Dr. Sheryl Sorby is a Professor of Engineering Education at the University of Cincinnati. She was a Fulbright Scholar at the Dublin Institute of Technology conducting research in engineering education and is a professor emerita of Mechanical Engineering at Michigan Tech. She is the

former Associate Dean for Academic Programs in the College of Engineering at Michigan Tech and served at the National Science Foundation as a Program Director in the Division of Undergraduate Education for nearly three years. Prior to her appointment as Associate Dean, Dr. Sorby served as chair of the Engineering Fundamentals Department. She received a BS in Civil Engineering, an MS in Engineering Mechanics, and a PhD in Mechanical Engineering-Engineering Mechanics, all from Michigan Tech.

Dr. Sorby has a well-established research program in spatial visualization, receiving her first grant from the NSF in 1993 to develop a course and course materials for helping engineering students develop their 3-D spatial skills. She has received numerous follow-up grants from the NSF and the Department of Education to further her work in developing and assessing spatial skills. Her spatial skills curriculum has been adopted by several engineering programs across the country. In 2005 she received WEPAN's Betty Vetter award for her work in improving the 3-D spatial skills of engineering students. She received ASEE's Sharon Keillor award for Outstanding Woman Engineering Educator and the Claire Felbinger award for Diversity, Equity, and Inclusion from ABET. She is a Fellow of the American Society for Engineering Education, a fellow of the European Society for Engineering Education (SEFI), and is the immediate Past President of ASEE.

**Dr. Ruth Wertz, P.E. 2021 ASEE IL-IN Section Outstanding Teacher Award Winner**



**Conference Committee**

Dr. Benjamin McPheron *Conference Chair*  
Chair, Department of Physical Sciences & Engineering  
Associate Professor of Electrical Engineering  
*Anderson University*

Dr. Courtney Taylor  
Chair, Department of Mathematics  
Professor of Mathematics  
*Anderson University*

Dr. Caroline Baker  
Assistant Professor of Mechanical Engineering  
*Anderson University*

Dr. Matthew Preston  
Assistant Professor of Computer Science  
*Anderson University*

Dr. Scott Kennedy  
Professor of Physical Sciences and Engineering  
*Anderson University*

Dr. Justin Lambright  
Director of First Year Experience Seminar  
Professor of Mathematics  
*Anderson University*