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ASEE Chemical Engineering Division Newsletter

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A Message from the Chair:

Troy Vogel
University of Notre Dame

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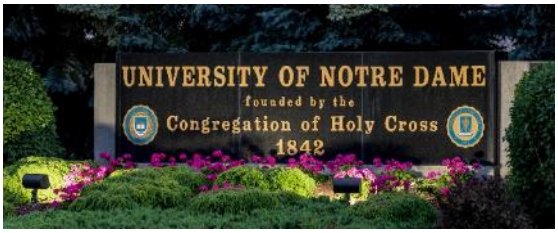
Community Announcements

Please send any announcements you'd like included in future newsletters to elif.miskioglu@bucknell.edu



Congratulations to everyone on another successful Academic Year. Let's all catch our breath and transition to "summer mode," teaching classes, increased family time, stepping away from the office, diving deep into research, or whatever summer mode means to you. But as this quieter time begins, I want to suggest a summer Chair Challenge to you: write 30 minutes a day. This may be writing for research, personal reflection, a short novel or memoir, just something to get fingers to a keyboard (or pen to paper!). At the end of the summer, we will ask for your success stories and publish a list of those completing the challenge in the Fall newsletter. It's not about the quality of the writing but consistently making writing part of your routine. Quality will increase as new habits form. For those of you who already write 30 minutes a day, choose a different communication medium, maybe drawing to create more memorable concept maps.

I'm especially excited to see all of you in Salt Lake City June 24-27. Dan Anastasio has worked tirelessly to organize your submissions into a great lineup of posters, panels, and six technical sessions, including a new to our division Works-in-Progress Postcard session. Tony Butterfield has helped to locate and organize a wonderful Awards Banquet on Monday night celebrating the hard work of our members. The division officers and I would love to hear about your writing progress at the mixer on Sunday evening.

I want to thank Elif Miskioğlu for her hard work editing the newsletters over the last year, show appreciation for all those seeking an officer position (remember to vote), and welcome Josh Enszer as incoming Chair where the golden wrench will be passed in Salt Lake City.

Remember that our students are the future. Teach them well so they can lead the way.

ChED Elections: Summary of Candidates

Candidate for Division Chair-Elect

Winner will serve as chair of ChE Division for 2019-2020

Matthew Cooper
North Carolina State University

Candidates for Director

Winner will serve as an advisor to the executive board for a term of 2 years

Janie Brennan
Washington Univ.
in St. Louis

Paul Golter
Ohio University

Jamie Gomez
University of New Mexico

Cast your vote by June 18th at: https://goo.gl/forms/jag5cbFIcfZztowt1

ChED Elections: Candidate for Chair-Elect

Matthew Cooper
North Carolina State University

I am excited to be considered for Chair-Elect of the ASEE Chemical Engineering Division! Prior to joining the faculty at NC State I received degrees in Chemical Engineering from West Virginia University (BS) and Ohio University (MS and Ph.D.). While in graduate school, I took every opportunity to serve as an instructor, TA or writing tutor in my free time. I enjoyed helping students understand various topics and was proud to observe their learning. After graduating with my Ph.D. I took a position with RTI International as a research engineer and for several years developed fascinating energy technologies. However, something unexpected happened during my time as a professional researcher – I realized I missed teaching. I made the risky decision to change the focus of my career from research to education in 2011, and the joys of my teaching career have shown me I made the right decision.

Since returning to academia I have enjoyed many opportunities to provide volunteer service to our profession, and I think these experiences make me a good fit for the position of ASEE CHED Chair-Elect. I first served CHED from 2013-2017 as Newsletter Editor and this summer I will finish my 2016-2018 term as a CHED Director. Over these five years of service on CHED's Executive Board I have observed the responsibility that goes along with the office of Chair and I am confident I can meet the challenge. I have also volunteered as an ABET PEV for the past several years, am active in the AIChE Education Division and served as Social Events Chair for the recent 2017 ASEE CHED Summer School in Raleigh.

I believe that ASEE CHED is currently positioned where we can realize great opportunities for advancement, but we must be proactive in identifying improvements and making appropriate changes. If elected I plan to engage division membership to identify what we like most about CHED as well as what we want to change moving forward. I will then work to enhance our division's strengths while implementing critical changes suggested by our membership. I am also interested in attracting new members to CHED by getting the word out about our friendly division. I'm excited for this opportunity - thank you for your consideration!

ChED Elections: Candidate for Director

Janie Brennan
Washington Univ. in St. Louis

I am honored to have been nominated to run for the position of Director in the Chemical Engineering Division of ASEE. I currently work as a Lecturer in the Department of Energy, Environmental & Chemical Engineering (EECE) at Washington University in St. Louis (WashU). Prior to teaching at WashU, I earned my Ph.D. in Chemical Engineering from Purdue University in West Lafayette. My passion for teaching really developed during graduate school, when I found I preferred TAing to my disciplinary research. I sought out additional mentorship in teaching, and ended up taking an Engineering Education pedagogy course originally developed by Prof. Phil Wankat (now taught by Prof. Heidi Diefes-Dux). My mentors encouraged me to get involved with ASEE, and I am extremely glad I listened to their advice, as involvement in ASEE has been a cornerstone of my professional experience. Last year in Columbus , I gave my first presentation at ASEE in the ChE division on problem-based learning in my unit operations course, and I am an author or co-author of two more ASEE papers this year dealing with separations activities and safety in unit operations. I have also served as the Treasurer of the New Engineering Educators Division for the past two years. Last summer I was fortunate enough to attend Summer School, which was an amazing experience professionally and at which I also won a poster award for my unit operations project.

While at WashU, I have taught a wide variety of chemical engineering courses, including graduate-level ChE mathematics, unit operations laboratory, bioprocess engineering, fluid dynamics, computational modeling/numerical methods, and separations. This April, I was awarded the Faculty Award for Outstanding Teaching in my department. I have also been coordinating the Master of Engineering program in EECE for the past two years as well as served as the faculty advisor for the WashU International Genetically Engineered Machine (iGEM) team, which performs independent research on a synthetic biology project of their own design. During the summers, I help coordinate summer research experiences for undergraduate students, including a minority-focused program called the Washington University Summer Engineering Fellowship (WUSEF).

I hope to continue building my connections within and through ASEE, particularly with the ChE division. I feel that I could make a strong contribution through a leadership role, and it would be a privilege to provide what service I can to this fantastic organization. Thank you for your consideration.

ChED Elections: Candidate for Director

Paul Golter
Ohio University

I am extremely honored to have been asked to be a candidate for a Director of ASEE's ChE Division, even though my most recent position was as a lecturer in ME at Ohio University, where I have been for the past two years. Prior to that I was a Post-Doc in ChE at Washington State University and an Adjunct at the University of Idaho. Before that I was the Chemical Engineering lab and computer tech at Washington State University and did graduate school on the side. I also spent four years as a process engineer in the pulp and paper industry.

I have been participating with the ChE Division almost continuously since 2005, when we received a division outstanding poster award. My research area has been in developing equipment to allow students to have hands-on experiences in upper division engineering classrooms. With the equipment we could then design classroom experiences and assess the impact on student learning. We have implemented in-class hands-on learning in Chemical Engineering, Civil Engineering, Mechanical Engineering, and Process Technology.

Thank you for your consideration. I look forward to the opportunity to serve this community that has given me so much knowledge, support, and encouragement over the years.

ChED Elections: Candidate for Director

Jamie Gomez
University of New Mexico

I am pleased to run for the Director position in this year's ASEE Chemical Engineering Division elections. I have been a Lecturer III in the Chemical & Biological Engineering (CBE) department at the University of New Mexico (UNM) since 2013. I received both my undergraduate and graduate degrees in chemical engineering at the Florida A&M- Florida State Universities Joint College of Engineering in Tallahassee, Florida. I have been an active member of ASEE for the past five years with contributions to conference presentations and publications. I teach several courses spanning the sophomore to senior years in the CBE curriculum that include *Material and Energy Balances, Computing using Aspen Plus, Chemical Engineering Junior Laboratory, and Design* sequence. As an innovative educator, I often encounter interesting paradigms from designing the learning experience to transforming student learning outcomes toward mastery to harnessing collaborative relationships amongst the learners. I am also co-principal investigator on two NSF grants (PFE\RED: Professional Formation- Formation of Accomplished Chemical Engineers for Transforming Society; PFE: Research Initiation- Using Digital Badging and Design Challenge Modules to Develop Professional Identity) both geared towards transforming engineering education. As a researcher in the classroom, I believe these experiences can contribute to the division's objectives including tailoring education for culturally diverse classrooms. In Summer 2017, I won an award for my work on 'Jigsaws & Parleys: Collaborative Learning Tools for Enhancing Student Engagement' at the 2017 ASEE Summer School for Chemical Engineering Faculty with an invitation to publish in the Chemical Engineering Education Journal. I was also a workshop presenter for *Integrating Community-, Industry-, Research, and Entrepreneurial Design Challenges into Core and Early Chemical Engineering Coursework to Enhance Diversity* at the 2017 Summer School. My article *Rurality as an asset for inclusive teaching in Chemical Engineering* has recently been published this Spring 2018 in the Diversity Special Issue of the Chemical Engineering Education Journal. I also received the UNM School of Engineering Junior Faculty Award for Teaching Excellence this year. I bring my background, fresh perspectives and enthusiasm to this position as well as desire to participate more closely with the division's activities to support chemical engineering education.

Annual Conference: ChED Special Events

Join ChE Division colleagues at one of our celebrations, events, or workshops!

M705: Chemical Engineering Division Awards Banquet
Monday, June 25th 7:00 PM to 9:00 PM at Cucina Toscana (282 S 300 W)
Ticketed Event: $60.00 advanced registration and $70.00 on site registration.
Join us for the presentation of this year's ChE Division awards!

ChE Division Informal "Dutch Treat" Dinner
Tuesday, June 26th 6:00 PM (Location To Be Determined)
Meet up after the business meeting to select a restaurant for a casual, "dutch treat" (pay-your-own) dinner with ChE Division colleagues.

M534: Interdivisional Town Hall Meeting, Who's in the Driver's Seat of Engineering Education?
Monday, June 25th 3:15 PM to 4:45 PM Grand Ballroom J, Convention Center
Unlike medicine, the engineering profession establishes new standards for engineering education through a distributed system of governance that mirrors the distributed structure of the profession. At the same time, many of us pursue educational innovation, continuous improvement, and unique institutional solutions in ways that maintain a productive tension with efforts to set common standards in engineering education. During this 90 minute interactive session, everyone will have an opportunity to participate in one of seven public conversations on the general topic. See program for more details on topics.
Speakers: Atsushi Akera, Donna M Riley, Alan Cheville, Jennifer Karlin

T305: Chemical Engineering Poster Session (more details on page 9!)
Tuesday, June 26th 11:30 AM to 1:00 PM Exhibit Hall A, B, and C, Convention Center

T505: Chemical Engineering Division Open Mic
Tuesday, June 26th 3:15 PM to 4:45 PM Room 355C, Convention Center
This informal session is open to a general audience and will be a free exchange of ideas, opportunities, and challenges within chemical engineering education.

T605: Chemical Engineering Business Meeting
Tuesday, June 26th 5:00 PM to 6:00 PM Room 150E, Convention Center
This meeting is open to all existing and potential members of the Chemical Engineering Division. Feel free to stop by, meet division members, and help plan for the coming year.

W405A: You Can Do It! Overcoming Challenges in Engineering Education Research
Wednesday, June 27th 1:30 PM to 3:00 PM Room 151F, Convention Center
In this workshop, division members Matthew Cooper and Milo Koretsky share insights and advice on conducting rigorous engineering education research.

Annual Conference: ChED Sessions

Monday, June 25th

T305: Hands-On Projects and Demos

3:15 PM to 4:45 PM Salon 1, HQ Hotel-Marriott at City Creek

Moderator: Daniel D. Burkey

1. **3-D Printing and Arduino in the Chemical Engineering Classroom: Protein Structures, Heat Exchangers, and Flow Cells**
   Dr. Jacob James Elmer (Villanova University) and Dr. Daniel Adam Kraut (Villanova University)
2. **Citizen Scientists Engagement in Air Quality Measurements**
   Prof. Anthony Butterfield (University of Utah) and Katrina My Quyen Le (AMES High School)
3. **Transference of Hands-on Desktop Learning Pedagogy Across Institution and Program Types**
   Ms. Negar Beheshti Pour (Washington State University), Kitana Manivone Kaiphanliam (Washington State University), Dr. Arshan Nazempour (Washington State University), David B. Thiessen (Washington State University), Prof. Robert F. Richards (Washington State University), Mr. Fanhe Shamus Meng (Washington State University), Dr. Olusola Adesope (Washington State University), Dr. Sarah A. Wilson (University of Kentucky), Dr. Derek L. Englert (University of Kentucky), and Prof. Bernard J. Van Wie (Washington State University)
4. **The River Project: an Open-Ended Engineering Design Challenge from Bench-Scale to Pilot-Scale**
   Dr. Lucas James Landherr (Northeastern University), Dr. Courtney Pfluger (Northeastern University), and Prof. Ryan A Koppes (Northeastern University)

Tuesday, June 26th

T105: ChemE Curriculum: Freshman and Sophomore

8:00 AM to 9:30 AM Room 150 G, Convention Center

Moderator: Anthony Butterfield

1. **A Framework to Guide Design of Interactive and Constructive Learning Opportunities**
   Dr. Tracy Q. Gardner (Colorado School of Mines)
2. **Chemical Engineering Major Selection Throughout the First Year: A Mixed-Methods Approach**
   Ms. Katherine Rae Tanner (Ohio State University), Dr. Rachel Louis Kajfez (Ohio State University), and Dr. Krista M Kecskemety (Ohio State University)
3. **Quantifying Self-guided Repetition Within an Interactive Textbook for a Material and Energy Balances Course**
   Prof. Matthew W. Liberatore (University of Toledo) and Ms. Katherine Roach (Affiliation unknown)
4. **Modeling Student Performance in an Introductory Chemical Engineering Course**
   Kyle Joe Branch (University of Utah) and Prof. Anthony Butterfield (University of Utah)

Tuesday, June 26th continued on page 9…

Annual Conference: ChED Sessions

Tuesday, June 26th continued…

T305: Chemical Engineering Poster Session

Tuesday, June 26th 11:30 AM to 1:00 PM Exhibit Hall A, B, and C, Convention Center

Board 39: Building Spreadsheet Skills Using an Interactive Textbook
Prof. Matthew W. Liberatore (University of Toledo) and Ms. Katherine Roach (University of Toledo)

Board 40: Effect of Online Recorded Video "Review Session" on Student Test Preparation and Performance for Fluid Mechanics Midterm at a University in the Netherlands
Prof. Michael D. M. Barankin (Colorado School of Mines) and Kevin Stratman (Colorado School of Mines)

Board 35: Work in Progress: Developing a Multi-dimensional Method for Student Assessment in Chemical Engineering Laboratory Courses
Dr. Daniel D. Anastasio (Rose-Hulman Institute of Technology), Dr. Heather Chenette (Rose-Hulman Institute of Technology), Dr. Gregory T. Neumann (Rose-Hulman Institute of Technology), and Dr. Tony Ribera (Rose-Hulman Institute of Technology)

Board 37: Work-in-Progress: Conceptual Activities for Separations Courses
Dr. Janie Brennan (Washington University in St. Louis)

Board 34: Incorporation of Process Sustainability Concepts in a Senior Design Course at a Minority Serving University
Dr. Matthew Lucian Alexander P.E. (Texas A&M University, Kingsville)

Board 36: Work in Progress: Assessment of Google Docs and Drive for Enhanced Communication and Data Dissemination in a Unit Operations Laboratory
Dr. Christopher James Barr (University of Michigan)

Board 38: Work In Progress: Development and Evaluation of an Online Chemical Engineering Bridging Course
Dr. Hassan Golpour (North Carolina State University), Dr. Matthew Cooper (North Carolina State University), and Dr. Lisa G. Bullard (North Carolina State University)

T405: Diversity and Global Experiences

1:30 PM to 3:00 PM Room 150 G, Convention Center

Moderator: Christi L Patton Luks

1. **Assessment of a Global Engineering Outreach Course**
   Dr. Randy S. Lewis (Brigham Young University), Ms. Terri Christiansen Bateman (Brigham Young University), and Prof. Carol J. Ward (Brigham Young University)
2. **Student Evaluation of Teaching in an Engineering Class and Comparison of Results Based on Instructor Gender**
   Mr. Byron Hempel (University of Arizona), Dr. Kasi Kiehlbaugh (University of Arizona), and Dr. Paul Blowers (University of Arizona)

Session papers continued on page 10…

Annual Conference: ChED Sessions

Tuesday, June 26th continued…

T405: Diversity and Global Experiences (continued from Page 9)

1:30 PM to 3:00 PM Room 150 G, Convention Center

Moderator: Christi L Patton Luks

3. **Damascus, AK to Pyongyang, NK: Developing an Entrepreneurial Mindset by Connecting Nuclear Weapons Safety, Chemical Process Safety and Global Politics**
   Dr. David DiBiasio (Worcester Polytechnic Institute), Dr. Kristin Boudreau (Worcester Polytechnic Institute), Dr. Leslie Dodson (Worcester Polytechnic Institute), and Dr. Curtis Abel (Worcester Polytechnic Institute)
4. **Supporting Diversity in Teams Through Asset Mapping**
   Dr. Jamie Gomez R (University of New Mexico) and Dr. Vanessa Svihla (University of New Mexico)

Wednesday, June 27th

W105: Works-in-Progress Postcard Session

8:00 AM to 9:30 AM Room 151F, Convention Center

Moderator: Cheryl A. Bodnar

1. **Exploring Mind Maps for Assessment in an Introductory Chemical Engineering Course**
   Prof. Joshua A Enszer (University of Delaware)
2. **Ten Years in the Trenches: an Updated Suite of Scenario-based Academic Integrity Videos**
   Dr. Adam T Melvin (Louisiana State University) and Dr. Lisa G. Bullard (North Carolina State University)
3. **Work in Progress: Identifying Current Standards and Addressing the Need for Further Process Safety Education in Unit Operations Courses**
   Ms. Tracy L. Carter (Northeastern University), Prof. Samira M. Azarin (University of Minnesota, Twin Cities), Dr. Janie Brennan (Washington University in St. Louis), Prof. Elizabeth Hill (University of Minnesota Duluth), and Amy J. Karlsson (University of Maryland - College Park)
4. **Work in Progress: Development of Web-based Pre-laboratory Modules to Increase Motivation and Reduce Cognitive Load**
   Kimia Moozeh (UNIVERSITY OF TORONTO), Prof. Deborah Tihanyi (University of Toronto), Prof. Jennifer Lyn Farmer (University of Toronto), and Dr. Greg Evans (University of Toronto)
5. **Work in Progress: Transforming a Course**
   Dr. Polly R. Piergiovanni (Lafayette College)
6. **Work in Progress: Content Validation of an Engineering Process Safety Decision-making Instrument (EPSRI)**
   Brittany Lynn Butler (Affiliation unknown), Dr. Daniel D. Anastasio (Rose-Hulman Institute of Technology), Prof. Daniel D. Burkey (University of Connecticut), Dr. Matthew Cooper (North Carolina State University), and Dr. Cheryl A Bodnar (Rowan University)

Session papers continued on page 11…

Annual Conference: ChED Sessions

Wednesday, June 27th continued…

W105: Works-in-Progress Postcard Session (continued from Page 10)

8:00 AM to 9:30 AM Room 151F, Convention Center

Moderator: Cheryl A. Bodnar

7. **Work in Progress: Integrating Process Safety and Ethics in Classroom Discussion through Surveys**
   Dr. Reginald E Rogers Jr (Rochester Institute of Technology (COE))

W305: ChemE Curriculum: Junior, Senior, and Graduate

11:30 AM to 1:00 PM Room 151F, Convention Center

Moderator: Heather Chenette

1. **Computer Simulations vs.Physical Experiments: A Gender Comparison of Implementation Methods for Inquiry-Based Heat Transfer Activities**
   Dr. Katharyn E. K. Nottis (Bucknell University), Dr. Margot A. Vigeant (Bucknell University), Dr. Michael J. Prince (Bucknell University), Dr. Amy Frances Golightly (Bucknell University), and Ms. Carrine Megan Gadoury (Bucknell University)
2. **Effective Teamwork Dynamics in a Unit Operations Laboratory Course**
   Dr. Erick S. Vasquez (University of Dayton), Dr. Zachary J. West (University of Dayton), Dr. Matthew DeWitt (University of Dayton), Dr. Robert J. Wilkens (University of Dayton), and Dr. Michael J. Elsass (University of Dayton)
3. **Ethics and Societal Impacts in the Education of Chemical Engineering Undergraduate and Graduate Students**
   Dr. Angela R Bielefeldt (University of Colorado, Boulder), Ms. Madeline Polmear (University of Colorado, Boulder), Dr. Chris Swan (Tufts University), Dr. Daniel Knight (University of Colorado, Boulder), and Dr. Nathan E. Canney ()
4. **How We teach: Unit Operations Laboratory**
   Dr. Margot A. Vigeant (Bucknell University), Dr. David L. Silverstein P.E. (University of Kentucky), Dr. Kevin D. Dahm (Rowan University), Dr. Laura P. Ford (University of Tulsa), Dr. Jennifer Cole (Northwestern University), and Dr. Lucas James Landherr (Northeastern University)

W505: Novel Classrooms

3:15 PM to 4:45 PM Room 151A, Convention Center

Moderator: Daniel D. Anastasio

1. **A Graduate Student Pedagogy Seminar in Chemical Engineering**
   Dr. Christina Smith (Brown University), Ann Sitomer (Portland State University), and Dr. Milo Koretsky (Oregon State University)

Session papers continued on page 12…

Annual Conference: ChED Sessions

Wednesday, June 27th continued…

W505: Novel Classrooms

3:15 PM to 4:45 PM Room 151A, Convention Center

Moderator: Daniel D. Anastasio

2. **BioEngineering Lab Techniques: A Novel Lab Course for Protein Expression in Bacterial and Mammalian Cells**
   Dr. Jacob James Elmer (Villanova University), Dr. Andre Palmer (Ohio State University), and Prof. Jessica O Winter P.E. (Ohio State University)
3. **Just the Flippin' FAQs**
   Julie L. P. Jessop (University of Iowa) and Dr. Anna L. Flaming (University of Iowa)
4. **Students' Responses to Professionally Contextualized Activities in a Studio Class**
   Mr. Ayman M. Alabdullatif (Oregon State University), Mr. Shane Paul Lorona (Oregon State University), and Dr. Milo Koretsky (Oregon State University)

Photo Credits

Spring at the White House: Joyce Boghosian; **Salt Lake City Skyline**: CountryLemonade