

ASEE DIVISION OF EXPERIMENTATION & LABORATORY-ORIENTED STUDIES (ELOS)

ASEE ANNUAL MEETING 2025 – MONTREAL, CANADA

ELOS DIVISION INFORMATION

The Experimentation and Laboratory-Oriented Studies Division (ELOS) is concerned with the laboratory component of engineering curricula. Thus, it consists of people who strongly believe in the importance of laboratories at all levels of instruction.

The main activity of the division is the program which it develops for the Annual Conference. Sessions are devoted to innovations in laboratory instruction and each year one of the engineering divisions is highlighted in a separate session.

ELOS PROGRAM OVERVIEW FOR ASEE ANNUAL MEETING 2025 (SUNDAY 06/22/'26 – WEDNESDAY 06/25/'26)

For a more detailed program, refer to the extended program description below. Please also refer to the ASEE online schedule builder for any last-minute changes. The program below was last checked online on Friday June 6th, 2025.

DAY	LOCATION	START	END	EVENT
SUNDAY 06/22 – FIRST CONFERENCE DAY				
Sunday	517CD – Ballroom Palais des congrès de Montreal	03:30 pm	05:00 pm	U561 ASEE Division Community Mixer Join your friends and colleagues at the ASEE member engagement event – the Division Mixer!
MONDAY 06/23 – SECOND CONFERENCE DAY				
Monday	512D – Theatre Palais des congrès de Montreal	11:00 am	12:30 am	M326 ELOS Technical Session 1: <i>Integrating AI, VR, and MR in Engineering Lab Experiences</i>

Monday	512D – Theatre Palais des congres de Montreal	01:30 pm	03:00 pm	M426 ELOS Technical Session 2: <i>Innovative Strategies for Fostering Deeper Learning in Engineering Laboratories</i>
Monday	512D – Theatre Palais des congres de Montreal	03:15 pm	04:45 pm	M526 ELOS Technical Session 3: <i>Advancing Engineering Competencies: From Labs to Writing</i>
Monday	517A – Palais des congres de Montreal	03:15 pm	04:45 pm	M561·INTERDIVISIONAL TOWN HALL: <i>From Challenges to Change: Engineering Education with Inclusive Mindsets.</i> The annual Interdivisional Town Hall (ITH) provides a forum for members from various divisions and attendees to discuss topics relevant to the entire ASEE membership.
TUESDAY 06/24 – THIRD CONFERENCE DAY				
Tuesday	512D – Theatre Palais des congres de Montreal	09:15 am	10:45 am	T226 ELOS Technical Session 4: <i>Empowering Student Learning Through Design, Integration, and Assessment</i>
Tuesday	512D – Theatre Palais des congres de Montreal	11:00 am	12:30 pm	T326 ELOS Technical Session 5: <i>BYOE (Bring Your Own Experiment): Innovative Tools and Techniques for Experiential Engineering Education</i>
Tuesday	512D – Theatre Palais des congres de Montreal	12:30 pm	01:30 pm	ELOS Community Lunch Instead of to a formal dinner, ELOS invites you to join us for grabbing a lunch together. This is a great opportunity to get into contact with the division, reflect on the conference so far, and share time with a great group of people, all dedicated to the laboratory as an instructional space. We will meet in front of 512D just after our first BYOE session and spontaneously find a lunch spot together. You are very welcome to join us!
Tuesday	512D – Theatre Palais des congres de Montreal	01:30 pm	03:00 pm	T426 ELOS Technical Session 6: <i>BYOE (Bring Your Own Experiment): Engaging Students with Creative Hands-on Laboratory Experiences</i>
Tuesday	Notre Dame - Boardroom Westin Montreal	03:15 pm	04:45 pm	T526A ELOS Business Meeting Come and join us for our 2025 ELOS Business Meeting! This is an event open for everybody who is interested in the ELOS division and experimentation-based instruction. Long-term division members, new or prospective division members and visitors are always very much welcome!

WEDNESDAY 06/25 – LAST CONFERENCE DAY				
Wednesday	517B - Palais des congres de Montreal	08:00 am	09:30 am	W131· Creaform 3D Scanners – Instrumentation in the Educational Space Free ticketed event - Join Creaform's Paul Arthurs (Application Engineer) and Sarah Giroux (Educational Sales Manager) for an in-depth look at how metrology-grade portable 3D scanners can be effectively integrated into engineering education. This lecture-style workshop is designed for faculty interested in enhancing their curriculum with industry-relevant instrumentation.

Workshop

ELOS Technical Sessions

Joint Sessions and Special Events

ELOS Business Meeting

BEST PAPER AWARDEES 2025

Congratulations to our 2025 ELOS paper awardees!

BEST ELOS OVERALL PAPER 2025

Paper ID 46878 – Work-In-Progress: Using Audience Avatars to Improve GTA Assessment of Student Communication in Large Engineering Classes

Authors: Peter Griffiths, Jill Fennel

Paper presented in ELOS Session 4: *Empowering Student Learning Through Design, Integration, and Assessment (T226)*

BEST ELOS DIVERSITY PAPER 2025

Paper ID 47292 – Faculty Professional Development in Engineering Lab Writing Pedagogies Through a National Workshop

Authors: Dave Kim, Charles Riley, Sean St. Clair, Olusola Adesope

Paper presented in ELOS Session 3: *Advancing Engineering Competencies: From Labs to Writing (M526)*

BEST ELOS STUDENT PAPER 2025

Paper ID 48543 – Work-In-Progress: Applying Backwards Design Principles to Redesign of a Summer Research Experience for Undergraduates

Authors: David Czerwonky, Senay Purzer, Kay Kobak

Paper presented in ELOS Session 2: *Innovative Strategies for Fostering Deeper Learning in Engineering Laboratories (M426)*

BEST ELOS BRING YOUR OWN EXPERIMENT (BYOE) PAPER 2025

Paper ID 49369 – BYOE: A Multidisciplinary DIY Speaker Design Project

Authors: Brian Krongold, Gavin Buskes

Paper presented in ELOS Session 5: *BYOE: Innovative Tools and Techniques for Experiential Engineering Education (T326)*

The ELOS division paper awards 2025 are financially sponsored by the *International Association of Online Engineering (IAOE)*. IAOE is an international non-profit organization with the objective of encouraging the wider development, distribution and application of Online Engineering (OE) technologies and its influence on the society. The association seeks to foster practices in education and research in universities, higher education institutions and the industry on OE. **We deeply thank our 2025 Sponsor for the support!**



IAOE is also hosting an annual conference on education, technology, and industry collaboration, the *International Conference on Smart Technologies & Education (STE)*. STE is an annual event dedicated to the fundamentals, applications and experiences in the field of Smart Technologies, Online, Remote, and Virtual Engineering, Virtual Instrumentation and other related new technologies.

2026 STE will be held at Transilvania University of Brasov (Romania) from March 11 to March 13, 2026. IAOE invites you to submit your work and join them in Romania!

As part of IAOE, the Global Online Laboratory Consortium, short GOLC, presents each year the **GOLC International Online Laboratory Awards**. With this award, GOLC and IAOE search for stellar examples of online laboratories in educational settings from all STEM fields. Awards will be given to outstanding laboratories in three categories: (1) Remotely Controlled Experiments, (2) Simulated and Digitally Visualized Experiments, (3) Virtual Reality and Augmented Reality Experiments. **Deadline for the 2026 GOLC award is October 15, 2025.**

Scan for more info about **IAOE!**



Scan for more info about **STE 2026!**



Scan for more info about the **GOLC Award!**



ELOS DIVISION LEADERSHIP 2024/25 CYCLE

Dominik May	Division Chair	University of Wuppertal (GER)	dmay@uni-wuppertal.de
Hans Mayer	Program Chair	California Polytechnic State University	hmayer@calpoly.edu
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Gautom Das	Director, BYOE Coordinator	University of Maryland, Baltimore County	gautom@umbc.edu
Natasha Smith	DEI Council Delegate	University of Virginia	nlsmith@virginia.edu

EXTENDED ELOS PROGRAM FOR ASEE ANNUAL MEETING 2025 (SUNDAY 06/22/'26 – WEDNESDAY 06/25/'26)

DAY	LOCATION	START	END	EVENT
SUNDAY 06/22 – FIRST CONFERENCE DAY				
Sunday	517CD – Ballroom Palais des congrès de Montreal	03:30 pm	05:00 pm	U561 ASEE Division Community Mixer Join your friends and colleagues at the ASEE member engagement event – the Division Mixer
MONDAY 06/23 – SECOND CONFERENCE DAY				
Monday	512D – Theatre Palais des congrès de Montreal	11:00 am	12:30 am	M326 ELOS Technical Session 1: <i>Integrating AI, VR, and MR in Engineering Lab Experiences</i> Papers presented:

				<ol style="list-style-type: none"> 1. ID 45752: Development of an AI student assistant in the VR thermal fluids lab and evaluation of its impact on students' learning; Jessica Perez (Cal Poly Pomona), Yitong Zhao (Cal Poly Pomona), and Juliana Fuqua. 2. ID 46142: 360 Degrees of Collaboration: An Autoethnographic Approach to Developing VR-Based Aviation Maintenance Training; Lisa Bosman (Purdue University), Nathanael Kloeppel (Purdue Polytechnic Graduate Programs), Denis Uebiyev, and Joshua Ellis (Purdue University). 3. ID 46867: An Aeroelasticity Experiential Learning Activity with AI-Driven Comparative Analysis and Evaluation; Bobby Hodgkinson (University of Colorado Boulder). 4. ID 48853: Development of Mixed Reality Labs in Circuits Theory; Justin Foreman (Prairie View A&M University), Penrose Cofie (Prairie View A&M University), Keisha Antoine (Prairie View A&M University), Michael Preuss, Kazeem Olanrewaju (Prairie View A&M University), Joseph Dowell, and Jorge Gabitto (Prairie View A&M University). 5. ID 47841: Fabricating the Invisible: A Case Study of Observing Nano with the NanoFrazor; Dr. Nicholas Hendricks (Heidelberg Instruments Nano AG), Tanisha Gupta (Worcester Polytechnic Institute), Dr. Emine Cagin (Heidelberg Instruments Nano AG), Brett Michael Mann (Worcester Polytechnic Institute), Sophia Reynolds (Worcester Polytechnic Institute), Prof. Nancy Burnham (Worcester Polytechnic Institute), John Andrew DePalma (Worcester Polytechnic Institute), Prof. Carolina Ruiz (Worcester Polytechnic Institute (WPI)), Jeffrey Solomon (Worcester Polytechnic Institute), and Jonas Vergés (Affiliation unknown) – <i>Poster presentation</i> 6. <p>Moderated by: Dr. Ahmet Can Sabuncu</p>
Monday	512D – Theatre Palais des congrès de Montreal	01:30 pm	03:00 pm	<p>M426 ELOS Technical Session 2: <i>Innovative Strategies for Fostering Deeper Learning in Engineering Laboratories</i></p> <p>Papers presented:</p> <ol style="list-style-type: none"> 1. ID 46156: Supporting Student Success: Embedding Continuous Improvement in a Hands-on Engineering Education Program; Rachel Sharpe (University of Colorado Boulder), Kai Amey (University of Colorado Boulder), Lauren Darling (University of Colorado Boulder), Heidi Loshbaugh, and Nick Stites (University of Colorado Boulder).

				<ol style="list-style-type: none"> 2. ID 46856: Design of an Inquiry-Based Independent Experiment in a Heat Transfer Laboratory; Blake Johnson (University of Illinois Urbana-Champaign) and Iakov Gurevich (University of Illinois Urbana-Champaign). 3. ID 48685: Open-inquiry in the laboratory: a case study of a scenario-based pipe flow activity; Peter Johnson. 4. ID 48088: Integrating Cyber-Physical Security Training to the Electrical Engineering Program via Experiential Learning; Jairo Giraldo (University of Utah), Sangshin Park (University of Utah), Reza Kamali, Hamed Nademi, and Manish Parashar (University of Utah). 5. ID 48543: Work-in-Progress: Applying Backwards Design Principles to Redesign a Summer Research Experience for Undergraduates; David Czerwonky (Purdue University), Senay Purzer (Purdue University), and Kay Kobak (Purdue University). *ELOS Best Student Paper* <p>Moderated by: Ms. Osama Desouky</p>
Monday	512D – Theatre Palais des congrès de Montreal	03:15 pm	04:45 pm	<p>M526 ELOS Technical Session 3: <i>Advancing Engineering Competencies: From Labs to Writing</i></p> <p>Papers presented:</p> <ol style="list-style-type: none"> 1. ID 49318: Work In Progress: Adding Additional Methods to Identify Mistakes in an Undergraduate Biomedical Instrumentation Laboratory Course; Rebecca Reck (University of Illinois Urbana-Champaign), Hannah Kimmel (University of Illinois Urbana-Champaign), Megha Agrawal (University of Illinois Urbana-Champaign), Joseph Tibbs (University of Illinois Urbana-Champaign), and Kaitlyn Tuvilleja. 2. ID 48965: Systematic Review of Teaching Kits in Biomedical Engineering Education; Alison Nandram (University of Ottawa) and Jason Foster (University of Ottawa). 3. ID 47767: Work-in-Progress: Enhancing Experimentation Skills in Engineering Students Through Reflective Memos: A Qualitative Study; Azadeh Bolhari (University of Colorado Boulder) and Angela Bielefeldt (University of Colorado Boulder). 4. ID 46727: Effectiveness of Checklists in Developing Technical Writing Skills; Gautom Das (University of Maryland, Baltimore County). 5. ID 47292: Faculty Professional Development in Engineering Lab Writing Pedagogies through a National Workshop; Dave Kim (Washington State University – Vancouver), Charles Riley (Oregon Institute of Technology), Sean

				<p>St. Clair (Oregon Institute of Technology), and Olusola Adesope (Washington State University). *ELOS Best Diversity Paper*</p> <p>Moderated by: Dr. Al Ferri</p>
Monday	517A – Palais des congres de Montreal	03:15 pm	04:45 pm	<p>M561-INTERDIVISIONAL TOWN HALL: <i>From Challenges to Change: Engineering Education with Inclusive Mindsets.</i></p> <p>The annual Interdivisional Town Hall (ITH) provides a forum for members from various divisions and attendees to discuss topics relevant to the entire ASEE membership.</p>
TUESDAY 06/24 – THIRD CONFERENCE DAY				
Tuesday	512D – Theatre Palais des congres de Montreal	09:15 am	10:45 am	<p>T226 ELOS Technical Session 4: <i>Empowering Student Learning Through Design, Integration, and Assessment</i></p> <p>Papers presented:</p> <ol style="list-style-type: none"> 1. ID 48409: Work-in-Progress: KICK 4.0 - AI Chatting Skills in the Engineering Laboratory; Johannes Kubasch (University of Wuppertal), Dominik May (University of Wuppertal), and Doha Meslem (University of Wuppertal). 2. ID 48967: Improved Student Comprehension Through Student-Designed Tensile Testing Laboratory; John Matsson (Oral Roberts University), Wesley Klehm (Oral Roberts University), Emmelia Lichty (Oral Roberts University), Moriah Metellus (Oral Roberts University), Quadre Moore (Oral Roberts University), and Jonathan Ophus (Oral Roberts University). 3. ID 47224: Work-In-Progress: Bridging the Knowledge Gap- Integrating Design, 3D Modeling, Simulation, and Testing in a Junior-Level Biomaterials Course for Improved Student Outcomes and Employability; Younghye Song (University of Arkansas), Bryce Williams (University of Arkansas), Patrick Kuczwarra (University of Arkansas), and Mostafa Elsaadany (University of Arkansas). 4. ID 48650: Assessing Air Quality at HBCU Engineering Laboratories to Enhance Student Safety and Learning; Pelumi Abiodun (Morgan State University), Grace Balogun (Morgan State University), David Owolabi (Morgan State University), Michael Ige (Morgan State University), Tolulope Abiri (Morgan State University), and Oludare Owolabi (Morgan State University). 5. ID 46878: Work-In-Progress: Using Audience Avatars to Improve GTA Assessment of Student Communication in Large Engineering Classes; Peter Griffiths (University of Virginia) and Jill Fennell (Georgia Institute of Technology). <p>*ELOS Best General Paper*</p>

				Moderated by: Dr. George Prpich
Tuesday	512D – Theatre Palais des congrès de Montreal	11:00 am	12:30 pm	T326 ELOS Technical Session 5: BYOE (Bring Your Own Experiment): Innovative Tools and Techniques for Experiential Engineering Education Papers presented: <ol style="list-style-type: none"> 1. ID 46388: The Mariner's Quadrant: Teaching Keystone Concepts via a Historical Engineering Tool; Amanda Sterling (Auburn University) and Anahita Ayasoufi (Auburn University). 2. ID 48848: BYOE: Building Robust VR Learning Environments: Best Methods to Visualize divergence-free Vector Fields; Alexander Shaffer (University of Illinois Urbana-Champaign) and Raluca Ilie (University of Illinois Urbana-Champaign). 3. ID 48559: Go with the Flow! Design and testing of a modular kit for at-home hands-on fluid dynamics instruction; Kenneth Kiger (University of Maryland, College Park), Giorgio Arzata-Juarez (University of Maryland, College Park), Daniel Boback (University of Maryland, College Park), Annabelle Diep (University of Maryland, College Park), Anna Dyson (University of Maryland, College Park), Jeyadave Kumar (University of Maryland, College Park), Vrunda Patel (University of Maryland, College Park), Terrence Pierce (University of Maryland, College Park), Joshua Sambrano (University of Maryland, College Park), Siloe-Noah Selebangué (University of Maryland, College Park), Alayna Sheahy (University of Maryland, College Park), Shravan Suresh (University of Maryland, College Park), Marklin Yi (University of Maryland, College Park), and Andrew Elby (University of Maryland, College Park). 4. ID 47314: BYOE: Hands-on Experiments for Teaching Process Safety: Exploring Dust Explosions; George Prpich (University of Virginia), Amara Pettit (University of Virginia), and Clare Cocker (University of Virginia). 5. ID 49369: BYOE: A Multidisciplinary DIY Speaker Design Project; Brian Krongold (University of Melbourne – Parkville) and Gavin Buskes (The University of Melbourne). *ELOS Best BYOE Paper* Moderated by: Dr. Dominik May
Tuesday	512D – Theatre Palais des congrès de Montreal	12:30 pm	01:30 pm	ELOS Community Lunch Instead of to a formal dinner, ELOS invites you to join us for grabbing a lunch together. This is a great opportunity to get into contact with the division, reflect on the conference so far, and share time with a great group of people, all dedicated to the laboratory as an

				instructional space. We will meet in front of 512D just after our first BYOE session and spontaneously find a lunch spot together. You are very welcome to join us!
Tuesday	512D – Theatre Palais des congrès de Montreal	01:30 pm	03:00 pm	T426 ELOS Technical Session 6: <i>BYOE (Bring Your Own Experiment): Engaging Students with Creative Hands-on Laboratory Experiences</i> Papers presented: <ol style="list-style-type: none"> 1. ID 46692: Laboratory Fixture for Heat Transfer Using a Hair Drier; Timothy Scott (Sweet Briar College) and Lemuel Curran (Sweet Briar College). 2. ID 48951: Stretch Blow Molding Laboratory Using Preform and 3D Printed Mold; John Matsson (Oral Roberts University), Trevont Moore (Oral Roberts University), Jonathan Ophus (Oral Roberts University), Gabriel Pendell (Oral Roberts University), Michael Portman (Oral Roberts University), Jordan Swan (Oral Roberts University), and Manuel Yanez (Oral Roberts University). 3. ID 48962: Taco Holder Laboratory Project; John Matsson (Oral Roberts University), Chidiebere Akudigwe (Oral Roberts University), Mark Baumruk (Oral Roberts University), Glory Hansel (Oral Roberts University), Grant Kaste (Oral Roberts University), and Jonathan Ophus (Oral Roberts University). 4. ID 47288: BYOE: Teaching and Assessing Troubleshooting Strategies in Circuits Courses; Caroline Crockett (University of Virginia), Adam Barnes (University of Virginia), George Prpich (University of Virginia), and Anne McAlister (University of Virginia). 5. ID 47661: A Small, Low-Cost Undergraduate Laboratory for the Study of Graph Theory and the Networked Control of Multi-Agent Systems; Erick Rodriguez-Seda (United States Naval Academy). Moderated by: Dr. Kip Coonley
Tuesday	Notre Dame - Boardroom Westin Montreal	03:15 pm	04:45 pm	T526A ELOS Business Meeting Come and join us for our 2025 ELOS Business Meeting! This is an event open for everybody who is interested in the ELOS division and experimentation-based instruction. Long-term division members, new or prospective division members and visitors are always very much welcome! Moderated by: Dominik May (Division Chair) and Hans Mayer (Program Chair)
WEDNESDAY 06/25 – LAST CONFERENCE DAY				

Wednesday	517B - Palais des congres de Montreal	08:00 am	09:30 am	W131· Creaform 3D Scanners – Instrumentation in the Educational Space Free ticketed event - Join Creaform's Paul Arthurs (Application Engineer) and Sarah Giroux (Educational Sales Manager) for an in-depth look at how metrology-grade portable 3D scanners can be effectively integrated into engineering education. This lecture-style workshop is designed for faculty interested in enhancing their curriculum with industry-relevant instrumentation.
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