WORKSHOP SCHEDULE OVERVIEW

TIME	Theme	DETAILS
07:00 AM	Buses depart from UBC Okanagan (via Airport Village)	
07:30 AM to **08:30 AM**	Breakfast & Workshop Registration	
08:30 AM to **11:00 AM**	**A**	**A1**-Integrating critical thinking in your teaching
	B	**B1**-The Emerging Role of Generative AI in Engineering Education – An Experiential Based Evaluation of the Student Perspective
	C	**C1**-Retooling the Iron Ring: A Value-Sensitive Approach to Engineering Ritual Design
	D	**D1**-Engineering Leadership Development in Canada—Institutionalizing our Stories through Case Study Development
	E	**E1**-Q-Methodology
10:00 AM to **10:30 AM**	Break	
10:30 AM to **12:00 PM**	**A**	**A2**-Engaging and Supporting Students in Holistic Thinking: Integrating Empathy Techniques into our Classroom
	B	**B2**-Leveraging AI for Engagement and Impact: An Exploration of ChatGPT in Engineering Education
	C	**C2**-Voices from the Heart: A trauma-informed and wisdom-inspired approach to wellness and thriving in engineering education
	D	**D2**-Exploring and Navigating the Canadian Engineering Education Grand Challenges
	E	**E2**-Introduction to survey design
12:00 PM to **01:00 PM**	Lunch	
01:00 PM to **02:30 PM**	**A**	**A3**-Application of the Learning Engineering Process to Support Engineering Education
	B	**B3**-Generative Peer Feedback: What Engineering Designers Can Learn from the Writers' Workshop
	C	**C3**-Exploring Positionality in Engineering Education
	D	**D3**-How to Introduce Followership to Students
	E	**E3**-Exploring Wicked Problems with System Mapping
02:30 PM to **03:00 PM**	Break	

03:00 PM to **04:30 PM**	**A**	**A4**-Bringing Paulo Freire to Engineering Education
	B	**B4**-Exploring eduSIM as a Tool for Online Synchronous Team-Based Engineering Education
	D	**D4**-Finding space and time for meaningful sociotechnical instruction
	E	**E4**-Semi-Automated Feedback Systems: Current Status and Expected Developments
04:30 PM to **07:30 PM**	Welcome Reception & Barbeque	
07:30 PM	Buses depart from Okanagan College to UBC Okanagan and Airport Village	

WORKSHOP SCHEDULE OVERVIEW – THEME-WISE

THEME	TIME	TITLE
A-Pedagogy and Instructional Design	**08:30 AM** to **11:00 AM**	**A1**-Integrating critical thinking in your teaching
	10:30 AM to **12:00 PM**	**A2**-Engaging and Supporting Students in Holistic Thinking: Integrating Empathy Techniques into our Classroom
	01:00 PM to **02:30 PM**	**A3**-Application of the Learning Engineering Process to Support Engineering Education
	03:00 PM to **04:30 PM**	**A4**-Bringing Paulo Freire to Engineering Education
B-Emerging Technologies in Engineering Education	**08:30 AM** to **11:00 AM**	**B1**-The Emerging Role of Generative AI in Engineering Education – An Experiential Based Evaluation of the Student Perspective
	10:30 AM to **12:00 PM**	**B2**-Leveraging AI for Engagement and Impact: An Exploration of ChatGPT in Engineering Education
	01:00 PM to **02:30 PM**	**B3**-Generative Peer Feedback: What Engineering Designers Can Learn from the Writers' Workshop
	03:00 PM to **04:30 PM**	**B4**-Exploring eduSIM as a Tool for Online Synchronous Team-Based Engineering Education
C-Social and Ethical Issues in Engineering	**08:30 AM** to **11:00 AM**	**C1**-Retooling the Iron Ring: A Value-Sensitive Approach to Engineering Ritual Design
	10:30 AM to **12:00 PM**	**C2**-Voices from the Heart: A trauma-informed and wisdom-inspired approach to wellness and thriving in engineering education
	01:00 PM to **02:30 PM**	**C3**-Exploring Positionality in Engineering Education

Workshop Schedule

18th June 2023 (Sunday) @ Okanagan College

D-Leadership and Professional Development in Engineering	**08:30 AM** to **11:00 AM**	**D1**-Engineering Leadership Development in Canada—Institutionalizing our Stories through Case Study Development
	10:30 AM to **12:00 PM**	**D2**-Exploring and Navigating the Canadian Engineering Grand Challenges
	01:00 PM to **02:30 PM**	**D3**-How to Introduce Followership to Students
	03:00 PM to **04:30 PM**	**D4**-Finding space and time for meaningful sociotechnical instruction
E-Assessment and Feedback Techniques	**08:30 AM** to **11:00 AM**	**E1**-Q-Methodology
	10:30 AM to **12:00 PM**	**E2**-Introduction to survey design
	01:00 PM to **02:30 PM**	**E3**-Exploring Wicked Problems with System Mapping
	03:00 PM to **04:30 PM**	**E4**-Semi-Automated Feedback Systems: Current Status and Expected Developments

Organizer(s)	**Rania Al-Hammoud,** *University of Waterloo* **Christine Moresoli,** *University of Waterloo*
Date and Time	18th June 2023 (Sunday) 08:30 AM to 10:00 AM
Location	Room 1
Theme	Pedagogy and Instructional Design
Title	Integrating critical thinking in your teaching
Abstract	Critical thinking is one of the most valued skills by employers. It is also what sets graduates apart. In 1987, the National Council for Excellence in Critical Thinking defined critical thinking as "Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action." In March 2022, the Conference Board of Canada identified critical thinking as one of the six skills 'for which vacancies incur the highest costs' (Lost Opportunities: Measuring the Unrealized Value of Skill Vacancies in Canada). While the importance of critical thinking has been recognized by employers, it is not always explicit and clearly articulated in engineering programs. The goal of this workshop is to provide an instructor tool kit on what is critical thinking, how it contributes to the engagement of students with their learning, how an instructor can intentionally integrate critical thinking in their teaching activities and share examples of the application of some of these tools to their own teaching. The workshop will start with a brief overview of critical thinking and tools and approaches to integrate critical thinking in the classroom. Topics to be discussed include but are not limited to the benefits of critical thinking for student learning, the use of prompts, visualization methods (such as concept maps, causal diagrams) and case studies. Participants will be able to analyze their existing teaching activities and how they contribute to critical thinking. The second portion of the workshop will be devoted to group work where participants will have the opportunity to apply some of the tools to their existing teaching activities to enhance critical thinking skills development of their students. The participants will also have the opportunity to select tools for the assessment of the critical thinking skills demonstrated by their students.

Organizer(s)	**Benjamin DeBoer,** *University of New Brunswick* **Kush Bubbar,** *University of New Brunswick*
Date and Time	18th June 2023 (Sunday) 08:30 AM to 10:00 AM
Location	Room 2
Theme	Emerging Technologies in Engineering Education
Title	The Emerging Role of Generative AI in Engineering Education – An Experiential Based Evaluation of the Student Perspective
Abstract	Generative AI has recently become an unavoidable topic of conversation in research and educational settings, due largely in part to the rise of ChatGPT from OpenAI™. This cutting-edge technology is poised to disrupt educational institutions across Canada and change how students and educators view and solve problems. Generative AI is becoming an indispensable tool to the public which should not be ignored nor restricted but rather understood and exploited. As educators, it is imperative to understand the history, applications, and limits of generative AI and its inevitable student application in educational settings. This workshop will explore the history and background of generative AI as well as its benefits, restrictions, potential implementations, and impact to policy in educational environments through an immersive and interactive problem-solving activity from the student perspective. See for yourself how generative AI can revolutionize the way we problem-solve, learn, and educate future engineers.

Organizer(s)	**Kari Zacharias,** *University of Manitoba* **Robyn Paul,** *University of Calgary* **Marcel O'Gorman,** *University of Waterloo* **Janna Rosales,** *Memorial University of Newfoundland*
Date and Time	18th June 2023 (Sunday) 08:30 AM to 10:00 AM
Location	Room 3
Theme	Social and Ethical Issues in Engineering
Title	Retooling the Iron Ring: A Value-Sensitive Approach to Engineering Ritual Design
Abstract	At the 2022 CEEA-ACEG conference, participants discussed the iron ring, the Obligation, and the Ritual of the Calling of an Engineer throughout multiple conference sessions and informal conversations. We shared our own stories and experiences, discussed the legacy of the ceremony's author, Rudyard Kipling, and debated the purpose and place of the ceremony and its associated symbols in modern Canadian engineering. Since the 2022 conference, conversations about the iron ring ceremony have continued. Among the notable developments are the formation and growth of a working group dedicated to advocating for changes to the current Ritual, and the Corporation of the Seven Wardens' announcement of their Ritual Review Committee. This workshop builds on current conversations about the iron ring ceremony through a series of value-sensitive design exercises, focused on exploring the relationship between engineering values and engineering rituals. Participants will first learn about the characteristics of rituals through activities based in Robert Grimes' work on ritual studies (Grimes 2014). Following these introductory activities, and a brief discussion of the current Ritual of the Calling of an Engineer, participants will map the values and stakeholders associated with the current iron ring ceremony using approaches from value-sensitive design (Friedman & Hendry 2019). Finally, participants will use the same value- and stakeholder mapping techniques, combined with the discussion of ritual characteristics, to imagine new engineering rituals. Through this workshop, the facilitators invite this year's CEEA-ACEG attendees to bring their own perspectives, values, and creativity to a design exploration. The main objective of the workshop is not to create "the" updated iron ring ceremony, but rather to use the tools of value-sensitive design and ritual studies to better understand our own values, dominant engineering values, and the relationship between these ideas and an engineering rite of passage. This exploration can inform participants' future design activities, pedagogies, service work, and advocacy, perhaps by allowing them to imagine new possibilities and preferable futures (Dunne & Raby 2013). The workshop will also provide engineering educators with processes and activities that they can use in their own courses. In particular, the workshop facilitators will present and demonstrate value-sensitive design brainstorming and mapping techniques that could be applied in a variety of engineering contexts. This workshop adheres closely to the conference theme of engagement and impact, focusing specifically on the key elements of diversity and inclusion. Current efforts to update the iron ring ritual are founded, in large part, on a desire to make engineering a more inclusive profession. Using the iron ring ritual as an example provides a pedagogical opportunity to help educators understand how they can support students to consider the broad social context of their work as engineers. Moreover, the value-sensitive design approach deployed in the workshop can be used in the classroom to help students carefully and critically identify stakeholders in their projects, further encouraging an engagement with inclusivity and diversity that will make an impact beyond the classroom.

Organizer(s)	**Cindy Rottmann,** *University of Toronto* **Marnie Jamieson,** *University of Alberta* **John Donald,** *University of Guelph*
Date and Time	18th June 2023 (Sunday) 08:30 AM to 10:00 AM
Location	Room 4
Theme	Leadership and Professional Development in Engineering
Title	Engineering Leadership Development in Canada - Institutionalizing our Stories through Case Study Development
Abstract	In 2009, Engineers Canada (EC) joined the National Association of Engineers (NAE) in their call for engineers to become more instrumental in leading change on a local, national, and global scale. Over the past 14 years, engineering leadership (EL) educators have heeded this call by introducing leadership learning opportunities into the formal and co-curriculum, often connecting with one another through Canadian and US-based EL networks (CEEA-SELM, ASEE-LEAD, NICKEL, and COMPLETE). The three proposed workshop facilitators have played an integral role in these networks, supporting the research and practice of EL development alongside a growing network of engineering educators, many of whom contributed to an EL development sourcebook published by Wiley in Spring, 2022. While this recently published collection of articles is relevant to a Canadian audience, only one of the seven programs highlighted as case studies, were located in Canada. Our proposed workshop will fill this gap in the literature by providing Canadian EL educators with the opportunity to document and map leadership development opportunities in our own national context. Workshop participants will be encouraged to reflect on their own leadership development journeys and generate case studies on EL programing in ways that honour their own institutional and regional contexts. This programing may take the form of an elective class, integration of leadership and management into design courses, co-curricular programing, research, or any other form of EL practice. The community of EL educators who attend this session will be invited to connect research to practice in their own contexts—narrating programmatic elements collected in national surveys and international surveys in their own words. In particular, participants will reflect on their own leadership learning experiences, discuss how they have passed their insights to the next generation of students, and document how their respective universities have begun to institutionalize this important learning process in Faculties of Engineering across the country. In short, we will take the collective temperature for EL development in Canada while working to meet Engineers Canada's 2009 call for change in the engineering profession.

Organizer(s)	**Qin Liu,** *University of Toronto*
Date and Time	18th June 2023 (Sunday) 08:30 AM to 10:00 AM
Location	Room 5
Theme	Assessment and Feedback Techniques
Title	Q-Methodology
Abstract	Q-methodology is a mixed method approach to examining individuals' subjectivity that is embedded in their personal opinions, life experiences and feelings. While it has been used in research in disciplines such as political science, psychology, education and nursing, it has been rarely applied to engineering education research. In this workshop, I will introduce what is methodology, what topics are suitable for a Q-study, and what steps a Q-study typically involves. You will be engaged in participating in the steps of a Q-study based on a practical example. The workshop will be highly interactive. You will gain the working knowledge of Q-methodology while having fun learning together. The materials of this workshop were co-developed with Prof. Susan McCahan based on a similar session offered at the ASEE conference in June 2022. By the end of this workshop, the participants should be able to explain the steps of a Q-study, and they may also get motivated to run a Q-study in their own research and educational contexts.

Organizer(s)	**Jennifer Howcroft,** *University of Waterloo* **Kate Mercer,** *University of Waterloo*
Date and Time	18th June 2023 (Sunday) 10:30 AM to 12:00 PM
Location	Room 1
Theme	Pedagogy and Instructional Design
Title	Engaging and Supporting Students in Holistic Thinking: Integrating Empathy Techniques into our Classroom
Abstract	Empathy at its core is our ability to understand the perspectives, worldviews and experiences of others. Empathy is often considered an emotional intelligence skill that can have both cognitive and affective components. Integrating empathy in a holistic manner can benefit our students, as has been shown in engineering, through improvements in interpersonal, design, professional, and ethical skills. However, as identified in a survey of engineering faculty, many instructors feel they lack the skills to teach empathy in the classroom. This workshop will focus on three empathy techniques from human factors that can be meaningfully and easily incorporated into a variety of engineering courses. These techniques are personas, empathy maps, and user journey maps. A persona is a fictitious, hypothetical person representative of a potential user whose characteristics are identified based on collected data of the actual or intended users, for example our students. Personas provide a human-focus when engaging in design and development work, developing test scenarios, and other situations. Empathy maps are a tool that could be used to more fully document insights when engaging with users in a variety of scenarios including observations, interviews, and testing of designed solutions. Empathy maps enable the capturing of what was said and done but also more empathy and holistic focused considerations regarding emotions, attitude, environmental factors, and others. An empathy map can be used to gain a deeper understanding of the student experience in our courses. User journey maps are a method of visually depicting a user task flow that are often augmented to capture not only the tasks involved but also the emotions of the user, user stress levels, or user pain points as they engage with a designed solution. This task could be a course assignment or test or even the entire semester. Attendees will then be guided through a process of considering how these techniques could be used by themselves as course instructors to be more inclusive and better meet the needs of their diverse students and can be taught to students to strengthen their skill development, particularly in teamwork and design work. Using empathy techniques as an instructor can help us design courses that are more inclusive, as we considered a greater diversity of students and their needs, more accommodating, as we practice empathy throughout the semester, and more effective educators. Equipping our student with empathetic skills will prepare them for their future careers as engineers. By the end of the workshop, attendees should be able to (1) understand empathy as an emotional intelligence skill and needed workplace skill, (2) apply empathy-based techniques to better understand their students' needs, and (3) engage students in empathy skill growth in their courses.

Organizer(s)	**Hanan Anis,** *University of Ottawa* **David Bruce,** *University of Ottawa* **Patrick Dumond,** *University of Ottawa* **Jason Foster,** *University of Ottawa* **David Knox,** *University of Ottawa* **Jason Millar,** *University of Ottawa* **Andrew Sowinski,** *University of Ottawa*
Date and Time	18th June 2023 (Sunday) 10:30 AM to 12:00 PM
Location	Room 2
Theme	Emerging Technologies in Engineering Education
Title	Leveraging AI for Engagement and Impact: An Exploration of ChatGPT in Engineering Education
Abstract	Artificial intelligence (AI) has the potential to revolutionize the way we learn and teach, and this hands-on workshop will explore the use of ChatGPT, a large language model developed by OpenAI, in engineering education. The workshop will be facilitated by the School of Engineering Design and Teaching Innovation at the University of Ottawa, leveraging a diverse set of educational experiences. The specific learning objectives of this workshop are: • To understand the capabilities of ChatGPT for enhancing the teaching and learning experience in an engineering context • To explore the use of ChatGPT for writing, programming, using technology, and searching for information • To discuss the potential for using ChatGPT for creating assessments and quizzes • To consider the ethical implications of using ChatGPT for education • To learn how to modify the curriculum and learning environment to maximize the benefits of AI technology The workshop will be highly participatory, with attendees actively using ChatGPT to enhance their understanding of the technology. Through hands-on activities and group discussions, educators will have the opportunity to experience the impact of ChatGPT in the classroom and to understand its capabilities. The workshop is designed to be inclusive, engaging both experienced users of ChatGPT and those who are new to the technology. Educators will have the opportunity to share their experiences and perspectives, and to learn from one another in a supportive and collaborative environment. Additionally, the ethical implications of using ChatGPT for education will be discussed. Educators will consider the potential risks and benefits of AI technology in education, and will examine strategies for mitigating any potential negative consequences. By considering the ethical implications of ChatGPT, educators will be equipped to make informed decisions about its use in an engineering education context. In conclusion, this workshop will provide educators with a comprehensive understanding of the potential for using ChatGPT in their engineering classrooms, and will equip them with the knowledge and skills needed to leverage AI technology for engagement and impact. Whether you are a seasoned ChatGPT user or new to this technology, you will leave this workshop with a deeper understanding of its potential to enhance engineering education.

Organizer(s)	**Kai Zhuang,** *York University, and Brave49* **Dimpho Radebe,** *University of Toronto* **Kim Johnston,** *University of Calgary* **Robyn Paul,** *University of Calgary*
Date and Time	18th June 2023 (Sunday) 10:30 AM to 12:00 PM
Location	Room 3
Theme	Social and Ethical Issues in Engineering
Title	Voices from the Heart: A trauma-informed and wisdom-inspired approach to wellness and thriving in engineering education
Abstract	The work of education innovation is stressful, challenging, and at times isolating. We carry our battle scars like armour, full of anxiety and striving, forgetting to reconnect with our people, our history, and our deeper selves. In this workshop, through the practices of intention setting, embodiment, and wisdom council, we are invited to breathe, to pause, to reconnect and to be held. Through this process, we make space for our collective wisdom and creativity to emerge. This workshop will involve a guided activity that will include the following: • A mindfulness exercise to slow down, to center, and to bring awareness to the present. • An intention-setting exercise to connect to the group and to our deeper selves. • A facilitated circle to allow participants to surface and share the deeper visions and voices needing to be heard on the topic of education innovation.

Organizer(s)	**Nadine Ibrahim,** *University of Waterloo* **Renato Bezerra Rodrigue,** *University of Manitoba* **Jillian Seniuk Cice,** *University of Manitoba* **Gabriel Potvin,** *University of British Columbia* **Nathalie Frigon,** *Polytechnique Montréal* **Shelir Ebrahimi,** *McMaster University* **Negin Ficzkowski,** *McMaster University*
Date and Time	18th June 2023 (Sunday) 10:30 AM to 12:00 PM
Location	Room 4
Theme	Leadership and Professional Development in Engineering
Title	Exploring and Navigating the Canadian Engineering Education Grand Challenges
Abstract	Inspired by the Canadian Engineering Grand Challenges, which were developed to help the engineering community in Canada address the wicked challenges of our times like climate change and resilient infrastructure, the community of engineering educators will explore the challenges that are specific to engineering education in the Canadian context and globally. The workshop will invite engineering educators and those who teach and interact with engineering students to brainstorm specifically engineering education challenges. This will help us to determine the shifts and changes, gaps and shortcomings, and the obstacles we face now and anticipate facing in the near future. This will also help us identify opportunities we can leverage that are contextualized to the Canadian context. This workshop session is an exercise in brainstorming to take stock of our collective engineering education challenges, and then group the challenges in meaningful ways that will then enable prioritizing our top challenges to provide direction for future actions. Goal setting will be a useful first step towards reimagining the future of engineering education. We will use the "Speedboat" brainstorming technique as the guiding framework for the workshop participatory activities. 1. Speedboat: Engineering Education, 2. Island destination: What do we want to achieve?, 3. Sun: What makes us feel good?, 4. Wind: What helps us move forward?, 5. Anchor: What holds us back?, 6. Reef: What are the future risks? The following three activities will form the basis of participation at the workshop: 1-Brainstorming activity: The goal is to take stock of the engineering education challenges and strengths we encounter now and into the future, and the opportunities present now and projected into the future. Participants will use Post-it notes to develop and list as many ideas as they can. 2-Grouping activity: The goal is to create a structure for grouping the challenges into the following scales of influence: individual/group; classroom/course; institution; engineering profession; national/global. 3-Prioritizing activity: The goal is to narrow down the challenges to a manageable few (eg.4-5) that the engineering education community could act upon and influence change within the near (and distant future). A later activity is envisaged to produce a technical/academic review of the 4-5 challenges identified to be presented at a future CEEA-ACÉG conference.

Organizer(s)	**Marnie Jamieson,** *University of Alberta* **Kimia Moozeh,** *Queen's University*
Date and Time	18th June 2023 (Sunday) 10:30 AM to 12:00 PM
Location	Room 5
Theme	Assessment and Feedback Techniques
Title	Introduction to survey design
Abstract	A well-designed survey is an important tool in the collection of reliable data and construct testing in engineering education and SoTL Research. This workshop will introduce participants to survey design principles. Specifically, pros and cons of existing surveys vs creating surveys, wording of survey questions and type of questions in the survey will be discussed. Participants are invited to use a construct to develop survey questions and determine the most appropriate type of questions (i.e., closed/open ended, Likert scale, multiple choice) based on the construct. Participants will have the opportunity to review a survey and improve the wording of the questions to better test the construct. Consideration of bias, assumptions and context will be discussed. Attendees will receive copies of explanation of practices discussed. The workshop will include group activities and discussion on survey design including examining the survey objectives, construct and conceptual development, survey question types and design. Participants will review and design a survey applying the concepts discussed in the workshop.

Organizer(s)	**Emily Marasco,** *University of Calgary* **Aaron Kessler,** *Massachusetts Institute of Technology*
Date and Time	18th June 2023 (Sunday) 01:00 PM to 02:30 PM
Location	Room 1
Theme	Pedagogy and Instructional Design
Title	Application of the Learning Engineering Process to Support Engineering Education
Abstract	Engaging students as partners in teaching and learning helps to facilitate a greater impact on individualized outcomes while supporting the development of CEAB engineering graduate attributes. Designing effective pedagogical practices can be just as challenging as any other engineering design goal and requires a similar systems-thinking approach. The IEEE IC Industry Consortium on Learning Engineering defines learning engineering as "a process and practice that applies the learning sciences using human-centered engineering design methodologies and data-informed decision making to support learners and their development". Aligned with engineering design methodologies, learning engineering provides a systematic approach for developing and implementing pedagogical innovation. This workshop will introduce the learning engineering process and how the principles may be applied within a Canadian engineering education context. Participants will explore important factors such as: • Learner context and the learning engineering team • Stakeholders (students, educators, industry, etc.) and desired outcomes • Learning environment and tools, whether in-person, hybrid, blended, and online. • Prior knowledge, cultural norms, accessibility and diversity • Data instrumentation, collection, and analysis for continual improvement Both theory and practical examples will be shared around a) understanding the challenge, b) designing and creating the solution, c) implementation with data collection, and d) investigation with data analysis. Participants will also learn about case study examples where the learning engineering process was applied. In one example we will explore the creation and improvement of a set of faculty resources and the way in which key decisions were made throughout the process. In a second example, from an advanced laboratory course curriculum revision project, iterative cycles of improvement are connected with course objectives, learning goals, and learner data to highlight the importance of sustained change and how new cycles of the learning engineering process can be started. These examples will ground the interactive session, in which participants will learn about the learning engineering process and how it can be applied to their own teaching and learning challenges. Working in groups, participants will have the opportunity to explore each step of the process while identifying common challenges and barriers that may be encountered. Participants will also work together to identify solutions for human-centered priorities such as EDI and accessibility considerations by analyzing their own collective observations and experiences. Finally, the workshop will end with a discussion of change management and best practices for overcoming resistance. At the completion of the session, participants will have a better understanding of the learning engineering process and available resources to continue their own exploration of the topic.

Organizer(s)	**Catriona Wright,** *University of Toronto*
Date and Time	18th June 2023 (Sunday) 01:00 PM to 02:30 PM
Location	Room 2
Theme	Emerging Technologies in Engineering Education
Title	Generative Peer Feedback: What Engineering Designers Can Learn from the Writers' Workshop
Abstract	Peer feedback is an essential skill for engineering students, yet too often students rush through the process or focus solely on finding 'errors', which prevents them from meaningfully improving their feedback skills and from reflecting on/critiquing their own work. In this workshop, we will discuss various approaches to the workshop model that are commonly used in creative writing classrooms as well as strategies for implementing these models in an engineering context. Going beyond the formative style of feedback that will be familiar to most instructors across disciplines, feedback in a creative writing context is generative, a creative act of collaboration that (hopefully) results in bolder, more innovative revisions for both the reviewer and the student being reviewed. Of particular importance will bean interrogation of the ways in which race, gender, sexual/gender identity, disability, and class can impact the peer feedback process. I will draw on my own experiences as a creative writing graduate student and as an instructor in the Institute for Studies in Transdisciplinary Engineering at the University of Toronto. Participants will also practice using these models through short workshops of (1) a collaboratively written poem and (2) the workshop itself. The goal of this session is to demonstrate how by engaging deeply with the peer feedback process, students can generate creative ideas, establish a mutually supportive and collaborative classroom and work culture, and feel empowered to direct their own learning.

Organizer(s)	**Stephanie Hladik,** *University of Manitoba* **Jillian Seniuk Cicek,** *University of Manitoba*
Date and Time	18th June 2023 (Sunday) 01:00 PM to 02:30 PM
Location	Room 3
Theme	Social and Ethical Issues in Engineering
Title	Exploring Positionality in Engineering Education
Abstract	Positionality "provides an opportunity for researchers to interrogate their own motivations, worldviews, beliefs, and embodied components of the research process" (Secules et al., 2021, p. 20). Ideas about how positionality can positively or negatively impact research quality are noted in the SAGE Encyclopedia of Qualitative Research Methods, which states that "researcher subjectivities may bias, unbalance, and limit endeavors, but they may also motivate and illuminate inquiry" (p. 1, emphasis added).The potential for positive or negative framings of subjectivity and positionality are echoed in Secules et al. (2021), who note that some researchers use positionality statements as a way of being transparent about potential biases, whereas others use this disclosure to highlight the unique viewpoints and strengths that the research brings to a particular study. As discourse surrounding positionality in engineering education is often weighted heavily towards the goal of avoiding bias, our goal in this workshop is to highlight the ways in which our positionalities strengthen our connections to our professional practice, while also acknowledging the complexity of navigating these positionalities in different contexts. In this workshop, we explore positionality in ways that are expansive and theoretically grounded, but also have concrete implications for our day-to-day work as engineering educators and engineering education researchers. As Holmes (2020) notes, Positionality, therefore, can be seen to affect the totality of the research process. It acknowledges and recognizes that researchers are part of the social world they are researching and that this world has already been interpreted by existing social actors. (p. 3) We will consider positionality in the context of our individual identities, group identities, relationships with the land, and relationships with communities. We argue for a view of positionality that moves beyond listing demographic information as static categories, and instead considers how these different identities are relevant (or not) in different contexts, how our positionality can change over time, and how we might negotiate membership in multiple groups (e.g., as both a researcher and an instructor).We hope that participants come away with a deeper understanding of themselves, and how their positionality can impact their pedagogy, research interests, research methodologies and analysis, and their professional practice.

Organizer(s)	**Marc Hurwitz,** *University of Waterloo*
Date and Time	18th June 2023 (Sunday) 01:00 PM to 02:30 PM
Location	Room 4
Theme	Leadership and Professional Development in Engineering
Title	How to Introduce Followership to Students
Abstract	When our students graduate, they invariably end up in a role that requires some followership. In fact, when employers complain that our students need more "leadership" skills, in fact they are often telling us that students need stronger followership skills. I have been teaching followership to undergraduate and graduate (engineering) students for15 years within a leadership course. As well, many of my graduate, M.Eng., students come from different cultural backgrounds that inform their ideas of leadership and followership. Invariably, however, by the end of the semester one of the two classes students tell me was most impactful was followership (the other was on negotiating). The first thing anyone has to do when introducing the concept of followership to a new group is... introduce the concept of followership. Similarly, the question I get asked most often by instructors who want to teach/train/deliver followership is on how to begin: "What are all the ways I can introduce followership to a new group of people?" The concern comes from three sources. Firstly, instructors worry that students won't be receptive to the message of followership; the desired outcome is to have students accept and understand it. Secondly, very few people have experience teaching followership and therefore want to know what are best practices for doing so. Finally, people wonder how to answer questions from students along with what are the most common questions. There aren't a lot of published or well-known ways of introducing followership (for example, see the review by Jenkins & Spranger, 2020). The format of this workshop will be to learn up to six different ways of introducing followership. Why six? Because the way to introduce followership depends on the audience, time allotted, and objectives for the session/lesson. There is no one best method, which means instructors need a suite of tools.

Organizer(s)	**Emily Moore,** *University of Toronto* **Dimpho Radebe,** *University of Toronto* **Amin Azad-Armaki,** *University of Toronto*
Date and Time	18th June 2023 (Sunday) 01:00 PM to 02:30 PM
Location	Room 5
Theme	Assessment and Feedback Techniques
Title	Exploring Wicked Problems with System Mapping
Abstract	Engineers are taught to think in systems but often these are limited in scope to the technical realm. However, many of today's "wicked problems" are as much dictated by social, environmental and political considerations as by any technical considerations. To influence and identify solutions, engineers need to be able to better understand the context of a given problem and to do this they need to communicate with stakeholders and experts from other fields. This workshop is based on a new course at the University of Toronto that introduces system mapping tools to help engineers better define and understand the wicked problems that they are interested in solving, ultimately situating their engineering contribution (which may be technical or non-technical) within the social, environmental and/or political context. System mapping is a semi-structured facilitation approach to represent a problem or situation, inherently both written and graphical, which allows for exploration of relationships. System maps are diagrammatic in a way that is familiar to engineering students, and there is a strong body of research and resources behind methods of creating systems maps. System maps are a widely used tool in urban planning, public health, life cycle analysis, and energy policy. In this workshop, participants will be introduced to systems thinking concepts and system mapping tools. We will lead participants in activities that have worked well in our own classroom, and that we think are scalable to other classrooms. Examples of outputs from students will also be shared, as well as resources that we have found helpful in our work.

Organizer(s)	**Renato Bezerra Rodrigues,** *University of Manitoba* **Paula Rodrigues Alves,** *University of Manitoba*
Date and Time	18th June 2023 (Sunday) 03:00 PM to 04:30 PM
Location	Room 1
Theme	Pedagogy and Instructional Design
Title	Bringing Paulo Freire to Engineering Education
Abstract	In Paulo Freire's seminal work, Pedagogy of the Oppressed, he argued that education is an emancipatory tool for people to become aware of and transform their social and political realities. Education should not be the mere transfer of factual knowledge, but the development of critical awareness about one's reality, through the inclusion and approximation of students' realities and experiences. This inclusion and approximation are key to development of relevant knowledge. Paulo Freire argued that traditional education (or "banking education" as he calls it) places students as bank accounts (passive recipients) where knowledge is deposited by the instructor in a hierarchical way. This is an oppressive approach because it: 1) does not allow for the active participation of students in the construction of their own knowledge; 2) reinforces the power dynamic between teachers and students; and, consequently, 3) perpetuates and imposes existing worldviews and perception of reality onto the students. “Problem-posing education” is offered as an alternative model of education. In this approach, the focus is on the process of learning, not just the end product of knowledge, and instructors and students are, at the same time, co-investigators and co-learners. They engage in a dialogical process of inquiry, where they actively pose and solve problems together. Problem-posing education approach that emphasizes active participation, dialogue, and critical thinking, encouraging students to ask questions, engage in critical thinking, and develop their own understanding of their reality. Unfortunately, in engineering, there is an instrumental thinking related to education in which students and instructors perceive it as the means to get a job. Additionally, there is a common belief that engineering is apolitical, value-free and neutral, which distances engineers from their own social and political reality (as professionals and citizens). The critical education of engineers must include the awareness of engineering as a deeply embedded, socially constructed process. The goal is to develop students' capacity to think critically about engineering and its role in society, allowing them to adopt emancipatory postures towards their work, and avoid perpetuating existing oppressions. They can actively use their technical knowledge to promote social change and to empower marginalized communities. In this workshop, we start by introducing Paulo Freire's key ideas and concepts in "Pedagogy of the Oppressed". Next, we will reflect on the purpose of education in our institutions, departments and classroom. And then, we will work together to envision what our teachings can look like if we incorporate some of Paulo Freire's ideas.

Organizer(s)	**Patrick Dumond,** *University of Ottawa*
Date and Time	18th June 2023 (Sunday) 03:00 PM to 04:30 PM
Location	Room 2
Theme	Emerging Technologies in Engineering Education
Title	Exploring eduSIM as a Tool for Online Synchronous Team-Based Engineering Education
Abstract	eduSIM.ca is an open-access web-based application for creating and hosting online educational simulations. The core feature of eduSIM is that it facilitates synchronized teamwork over the web, allowing groups of participants to work together in class or remotely in real time. eduSIM.ca was created as part of the eCampus Ontario Virtual Learning Strategy. This workshop will explore the use of eduSIM in engineering education to support hands-on team-based learning activities. The goal of the workshop is to familiarize participants with the tool and develop an understanding of how it can be used to enhance experiential learning. The objectives of this workshop are: • To participate in a simulation and understand eduSIM from a learner's perspective. • To create a simple simulation from scratch using the simulation creator tool. • To host a simulation using the administrator panel. • To discuss potential use cases for the tool inside and outside the engineering classroom. • To consider new features that could enhance the tool for engineering education. The workshop is designed to introduce participants to the features of the eduSIM platform, allowing participants to become familiar with its built-in functionality. Potential use cases for the platform will be discussed, along with example simulations. Hands-on activities will allow participants to work in teams to complete educational simulations and explore how domain specific or team-based learning objectives can be achieved and enhanced using the tool. Participants will also have the opportunity to create and host simple simulations in eduSIM to get a feel for what is possible in the current version of the online application. The workshop will encourage participants to discuss possible uses for eduSIM in their existing courses, as well as potential uses outside the classroom. There is an opportunity for participants to provide feedback on their intended use of the platform and propose new features that would increase the capabilities of the tool. At the end of this workshop, participants will have a thorough understanding of how to use the eduSIM platform to engage students in experiential team-based activities, while increasing the potential pedagogical impact of domain specific and team-based learning in engineering education. Laptops are highly recommended for participating is this workshop, as the creation of simulations on smaller devices can be difficult due to the number of features available to the user.

Organizer(s)	**Kari Zacharias,** *University of Manitoba* **Lydia Wilkinson,** *University of Toronto* **Tim Maciag,** *University of Regina* **Chantal Rodier,** *University of Ottawa* **Ken Tallman,** *University of Toronto* **Jillian Seniuk Cicek,** *University of Manitoba* **Laura Patterson,** *University of British Columbia Okanagan* **Renato Rodrigues,** *University of Manitoba*
Date and Time	18th June 2023 (Sunday) 03:00 PM to 04:30 PM
Location	Room 4
Theme	Leadership and Professional Development in Engineering
Title	Finding space and time for meaningful sociotechnical instruction
Abstract	At last year's CEEA-ACÉG, a collaboratorium hosted by the Engineering and Humanities SIG invited participants to discuss transdisciplinary approaches in engineering education vis-à-vis roundtable focused on decolonization, sociotechnical thinking, sociotechnical leadership and STEAM. A common thread through each of the discussions was the challenge of finding time to support these approaches within a dense engineering curriculum. This workshop will provide opportunities for engineering educators to reflect on, collaboratively identify and develop ways to integrate sociotechnical learning experiences while maintaining core course learning objectives and requirements. Many of us are familiar with the frustration of pleading with a small (or big) child to "just eat what's on your plate!" But what happens when that plate is overbrimming? Or filled with non-nutritious items? Using the metaphor of a balanced meal, participants will analyze the composition of a course to identify where they might modify their meal (course) to make space for missing, more nutritious or "tastier" (thought provoking-experiential and reflective) ingredients (learning experiences). As course designers we are often challenged to add more and more to our course plates. We must balance the "required" course content with the concepts, discussions, and pedagogical approaches that make these instructional experiences most impactful, and that help prepare our students for complex problem-solving environments beyond our classroom. By stepping back, sharing strategies, and understanding the current composition of our courses we can better understand what is missing, or what we can fine-tune, and more successfully develop novel approaches without over-stuffing our students and courses!

Organizer(s)	**Huanyi Chen,** *University of Waterloo* **Paul A.S. Ward,** *University of Waterloo*
Date and Time	18th June 2023 (Sunday) 03:00 PM to 04:30 PM
Location	Room 5
Theme	Assessment and Feedback Techniques
Title	Semi-Automated Feedback Systems: Current Status and Expected Developments
Abstract	Feedback is an essential component of learning: students acquire knowledge of concepts through reading, lectures, etc., but must then determine if their understanding is correct. This is achieved by answering questions about the material. Determining if a question is answered correctly is where feedback comes in: knowing where and how an answer is erroneous is the critical requirement for effective learning. The problem is that expert feedback is both time-consuming and expensive. In an ideal world, we might imagine fully automated feedback software that can completely understand student-submitted solutions and identify errors. While that is still some way off, partial but rapid feedback on student work can be very helpful, leading to better student engagement. In this workshop, we will present a state-of-the-art semi-automated feedback system that can reduce the need for human expert feedback, allowing human experts to focus on more complex issues. Therefore, we hereby present a semi-automated feedback system. Feedback-provider can set up assessments in the system. Learners can then submit answers to the assessments to receive feedback. The feedback is provided automatically. In addition, the system understands enough to know what needs human help and what is good to provide feedback on, so it will not give false information in the feedback. During the workshop, we will use sample courses to demonstrate the functionalities of the system. We will demonstrate how to add new assessments into the system, how to configure the feedback, and how learners will receive the feedback. We will also demonstrate how the system notifies the expert when feedback cannot be generated automatically, and how easily the expert can interfere with such cases. We will then ask participants to provide samples of the types of assignments they think they might like to have students do and get feedback automatically. We will go through the same process as above, but this time, we will ask participants to customize the feedback to match what they need, and we will show how the customization can be made online while the system is running. The semi-automated feedback system can benefit engineering education to a great extent.