

# EESD 2025

Engineers as Changemakers

The 12<sup>th</sup> International Conference on

## Engineering Education for Sustainable Development

*Engineers as Changemakers*

King's College London 15-18 June 2025

[www.eesd2025.org](http://www.eesd2025.org)



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# Whitbybird Foundation

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## Programme

### Venue

**King's College London**

Great Hall & Edmond J. Safra Lecture Theatre (King's Building)

Enter through the Main Reception on Strand (next to St Mary le Strand)

### Sunday 15 June 2025

- **5.15 pm – Opening remarks & Welcome Address (registration open from 4 pm)**
- **6.00 pm – Leo Jansen Prize Lecture**  
*Prof Edmond Byrne, University College Cork – Recipient of the 2023 Leo Jansen Prize*
- **7.00 pm – Welcome Reception**  
An informal evening to connect with colleagues and meet new faces in the EESD community
- **8.00 pm – Dinner on own**

### Monday 16 June 2025

#### **Morning: 9 am – 1 pm**

- **9.00 am – Welcome & practical information**
- **9.15 am – Opening Keynote Address**  
*Dr Michael K. J. Milligan, CEO of ABET*
- **10.15 am – Information about the Gala Dinner & Dinner Carousel**
- **10.30 am – Break & refreshments**
- **11.00 am – Parallel Sessions (presentation sessions A-D & workshops 1-2)**

#### **Lunch: 1 pm – 2 pm**

#### **Afternoon: 2 pm – 5 pm**

- **2.00 pm – Keynote Address**  
*Emma Crichton, Engineers Without Borders UK*  
*Prof Sarah Hitt, Engineering Professors' Council / NMITE*
- **3.00 pm – Break & refreshments**
- **3.30 pm – Plenary Panel #1: Education in Focus**  
This panel takes a critical look at the current state of engineering education.  
*Dr Michael Milligan, CEO of ABET*  
*Prof Sarah Hitt, NMITE and Engineering Professors Council*  
*Dr Tanya Morton, Global Director of Customer Success Engineering, MathWorks*  
*Dr Tatiana Vakhitova, Sustainability Lead, ANSYS*
- **4.45 pm – Closing remarks**
- **5.00 pm – Time on own**

#### **Evening**

- **6.15 pm – Gala Dinner IET Institution of Engineering & Technology**

### Tuesday 17 June 2025

#### **Morning: 9 am – 1 pm**

- **9.00 am – Parallel Sessions (presentation sessions E-H & workshops 3-4)**
- **11.00 am – Break & refreshments**
- **11.30 am – Plenary Panel #2: Industry in Focus**

This session brings together leading industry voices to explore how sustainability is transforming engineering practice.

*Brian Holliday*, Managing Director, Siemens Digital Industries (UK & Ireland)

*Maria Jobenius*, Sustainability Expert at Scania & Industrial PhD Researcher, KTH

*Sebastian Wood*, Whitbybird Foundation

#### **Lunch: 1 pm – 2 pm**

#### **Afternoon: 2 pm – 5.30 pm**

- **2.00 pm – Parallel Sessions (presentation sessions I-L & workshops 5-6)**
- **4.00 pm – Break & refreshments**
- **4.30 pm – Keynote Address**

*Prof Michele John*, Curtin University

- **5.15 pm – Closing remarks**
- **5.30 pm – Time on own**

#### **Evening**

- **Dinner Carousel (at own expense)**

A chance to unwind, share ideas informally, and experience London in a relaxed setting

### Wednesday 18 June 2025

#### **Morning: 9 am – 1 pm**

- **9.00 am – Parallel Sessions (presentation sessions M-N & workshops 7-9)**
- **11.00 am – Break & refreshments**
- **11.30 am – Parallel Sessions (presentation sessions O-P & workshops 10-12)**

#### **Lunch: 1 pm – 2 pm**

#### **Afternoon: 2 pm – 5 pm**

- **2.00 pm – Plenary Panel #3: Chairs of the Conference**  
Reflecting back on the conference and highlighting trends, ideas and discussions
- **3.00 pm – Award announcements**
- **3.25 pm – EESD2027**
- **3.45 pm – Thanks you and good bye!**
- **4.00 pm – Break & refreshments**

# EESD 2025

Engineers as Changemakers



Monday 16 June	Parallel track #1 Room K0.16	Parallel track #2 Room K0.18	Parallel track #3 Room K0.20	Parallel track #4: Edmond J Safra	Workshop: River Room	Workshop: Room K0.19	
11.00-13.00	<b>Session A Key Competences for Sustainability</b> Papers #76, #17, #27, #29 <b>Chair: Mark Minster</b>	<b>Session B Makerspace &amp; Project-Based Learning</b> Papers #54, #55, #80, #83 <b>Chair: Edmond Byrne</b>	<b>Session C Sustainability in Industry &amp; Practice</b> Papers #78, #16, #18, #45 <b>Chair: Mira Vogel</b>	<b>Session D Pedagogical Strategies &amp; Good Practice</b> Papers #34, #35, #40, #63 <b>Chair: Jordi Segalas</b>	<b>Workshop #1</b> Paper #90 Marincel Payne & Williams	<b>Workshop #2</b> Paper #36 Robertson	
Tuesday 17 June	Parallel track #1 Room K0.16	Parallel track #2 Room K0.18	Parallel track #3 Room K0.20	Parallel track #4: Edmond J Safra	Workshop: River Room	Workshop: Quad -1.26 (N)	Workshop: Quad -1.47 (S)
9:00-11:00	<b>Session E Curriculum &amp; Programme Development</b> Papers #30, #10, #14, #19 <b>Chair: Jenny Mueller</b>	<b>Session F Curriculum &amp; Programme Development</b> Papers #13, #21, #70 <b>Chair: Tom Siller</b>	<b>Session G Project-Based Learning &amp; Design</b> Papers #66, #91, #92 <b>Chair: Ulrika Lundqvist</b>	<b>Session H Technology for Sustainability</b> Papers #3, #7, #8, #37 <b>Chair: Mohit Arora</b>	<b>Workshop #3</b> Paper #53 Truslove, Hitt & Crichton	<b>Workshop #4</b> Paper #11 Shah, Preston & Fuller	<b>Workshop #10</b> DSL/FESTO Teimoori
14:00-16:00	<b>Session I Engineers as Changemakers</b> Papers #4, #56, #82, #46 <b>Chair: Pali Singh</b>	<b>Session J Problem-Based &amp; Experiential Learning</b> Papers #44, #69 <b>Chair: Dick Fenner</b>	<b>Session K HE Capacity Building in students, staff &amp; systems</b> Papers #6, #31, #49 <b>Chair: Dai Morgan</b>	<b>Session L AI for Sustainability</b> Papers #62, #68, #5 <b>Chair: Maryam Masood</b>	<b>Workshop #5</b> Paper #50/#79 Segalàs et al	<b>Workshop #6</b> Paper #9 Anderson	<b>Workshop #10</b> DSL/FESTO Teimoori
Wednesday 18 June	Parallel track #1 Room K0.16			Parallel track #4: Edmond J Safra	Workshop: River Room	Workshop: Quad -1.26 (N)	Workshop: Quad -1.47 (S)
9:00-11:00	<b>Session M Ethics and Responsibility in Engineering</b> Papers #12, #20, #88 <b>Chair: Meeri Karvinen</b>			<b>Session N Transformative &amp; Deep Learning Approaches</b> Papers #52, #61, #26, #86 <b>Chair: Bernard Mazijn</b>	<b>Workshop #7</b> Paper #33 Agg & Quazi	<b>Workshop #8</b> Paper #77 Dahlin, Bonfield & Polmear	<b>Workshop #9</b> Paper #71 Murphy & Goodman
11:30-13:00	<b>Session O Sustainability in Industry &amp; Practice</b> Papers #32, #51, #59 <b>Chair: Gerry Johnson</b>			<b>Session P Curriculum &amp; Programme Development</b> Papers #57, #58, #67 <b>Chair: Vivian Neal</b>	<b>Roundtable #1</b> Kirsten Williamson & Anna Garton	<b>Workshop #11</b> Paper #25 Ficzkowski, Donald & Zytner	<b>Workshop #12</b> Paper #84 Lawson-Bulten & Witmer

### Workshops

1. Paper #90 Author(s): Michelle Marincel Payne and Julia Williams  
Title: Enabling Perspective-Taking with Narrative Story to Teach Sustainability
2. Paper #36 Author(s): Elizabeth Robertson  
Title: Ethical Change: Equipping the next generation of changemakers with the tools to engage in Sustainable Engineering
3. Paper #53 Author(s): Jonathan Truslove, Sarah Hitt and Emma Crichton  
Title: How to navigate transformational change in engineering education
4. Paper #11 Author(s): Rehan Shah, Anne Preston and Stephanie Fuller  
Title: Promoting equity in engineering education for sustainable development through community-based learning and teaching
5. Paper #50/79 Author(s): Jordi Segalàs, Gemma Tejedor, Boris Lazzarini, Carme Martín, Johanna Martínez, Barbara Sureda, David López, Torsten Masseck, Giulia Sonetti, Gemma Molins and Eva Vidal  
Title: We're Hiring: Cook for a Transformative Learning Kitchen
6. Paper #9 Author(s): Cynthia Anderson  
Title: Co-creating Sustainability Engineering Curricula for All
7. Paper #33 Author(s): Chloe Agg and Sophia Quazi  
Title: Workshop to Support Embedding EDI in Teaching
8. Paper #77 Author(s): Jon-Erik Dahlin, Dawn Bonfield and Madeline Polmear  
Title: Engaging Students with Sustainability: A Hands-On Workshop in Game-Based Learning
9. Paper #71 Author(s): Eva Murphy and Lizbeth Goodman  
Title: Unmasking Bias, Embracing Inclusion: A Hands-on Inclusive Design Workshop for Engineering Educators to apply in their classrooms
10. DSL/FESTO Author(s): Omid Teimoori  
Title: Sustainability in Industry 4.0 – Live Demonstration and Interactive Workshop
11. Paper #25 Author(s): Negin Ficzkowski, John Donald and Richard Zytner  
Title: Co-Creating Regenerative Design Frameworks for Engineering Education and Practice
12. Paper #84 Author(s): Emily Lawson-Bulten and Ann-Perry Witmer  
Title: Teaching Positionality for Sustainable Development: A Workshop on Identity's Influence on Design

### Roundtables

1. Roundtable #1 Facilitator(s): Kirsten Williamson & Anna Garton  
Title: Credentials as mechanism to embed sustainability into engineering education

### Session A. Key Competences for Sustainability

- i. Paper #76 Author(s): Jon-Erik Dahlin, Cristina Al-Khalili Szigyarto, Ted Johansson, Roger Karlsson, and Madeline Polmear  
Title: Fostering Values Thinking in Engineering Students through a Game-Based Sustainability Intervention
- ii. Paper #17 Author(s): Linlin Pei, Arnoud Onnink, Arturo Susarrey-Arce, Jéré van Lente, Albert Wong, André ten Elshof, H. Wormeester and L. Krab-Hüsken  
Title: Integrating Essential Skills and Systems Thinking into Chemistry Education: The CLEAR Initiative for Sustainability
- iii. Paper #27 Author(s): Madeline Polmear  
Title: Exploring Engineering Identity Development Through Narrative and Arts-based Approaches
- iv. Paper #29 Author(s): Rhythima Shinde, Ana Andrade, Aisha Salim, Kristen Macaskill, Laurence Chater and Pratistha Poudel  
Title: Pre- and Post-Module Assessment of Improvement in Systems Thinking among Design Engineering Students: An Interactive Case Study-Based Approach

### Session B. Makerspace & Project-Based Learning

- i. Paper #54 Author(s): Corrina Cory  
Title: Engineering Maker Space and culture to enhance human creativity, exploration and collaboration for graduate success during industry 5.0
- ii. Paper #55 Author(s): Laura Fogg Rogers, Joe Butchers and Kat Corbett  
Title: Creating MAKERS Spaces
- iii. Paper #80 Author(s): Jennifer Farmer and Ariel Chan  
Title: Integrating Sustainability Principles into a Chemical Engineering Laboratory Curriculum
- iv. Paper #83 Author(s): Ana Rubio Denniss, Samuel Piper and Charlotte Palmer  
Title: Making Sustainably: Embedding Sustainable Practices in Project-based Design Engineering

### Session C. Sustainability in Industry & Practice

- i. Paper #78 Author(s): Anthony Heynen and Melanie Fleming  
Title: Relational, place-based learning for the energy transition through the application of social frameworks
- ii. Paper #16 Author(s): Andrew Cowell, Ursula Canton, Christopher Smith and Alan Nesbitt  
Title: Writing for Sustainability in Work-Based Projects
- iii. Paper #18 Author(s): Muhammad Talal Khalid, Listowell Appiah and Ann-Perry Witmer  
Title: Contextual inquiry: Ten guideposts for investigating a community's context.
- iv. Paper #45 Author(s): Meeri Karvinen and Tiina Pajukari  
Title: Reality check of sustainable engineering education: Exploring the leverage power of graduates in the early career

### Session D. Pedagogical Strategies & Good Practice

- i. Paper #34 Author(s): Chloe Agg and Marc Masen  
Title: Sustainable Teaching Practices for Teaching Sustainability
- ii. Paper #35 Author(s): Joseph Oyekale and James Atuonwu  
Title: Embedding Sustainable Development in Engineering Education: Showcasing a Practice Within an Energy Engineering Module at NMITE
- iii. Paper #40 Author(s): Pritpal Singh  
Title: Embedding Sustainability Concepts into a Renewable Energy Class
- iv. Paper #63 Author(s): Caitlin Bentley, Mira Vogel, Francesco Ciriello, Gabrielle Samuel, Jon-Erik Dahlin, Maira Klyshbekova, Ningyou Hou, Saumya Srivavastava, Amir Rahim and Sebastian Lehuède  
Title: Co-designing Encounters with AI in Education for Sustainable Development

### Session E. Curriculum & Programme Development

- i. Paper #30 Author(s): Tatiana Vakhitova, Nicolas Martin and Piers Ireland  
Title: Teaching social sustainability to engineering students with the help of Social Impact Audit Tool
- ii. Paper #10 Author(s): Cynthia Anderson  
Title: How Open Source Engineering for One Planet (EOP) Teaching Resources are Helping Faculty Infuse Sustainability in Diverse Courses and Programs
- iii. Paper #14 Author(s): Christianos Burlotos and Kristen MacAskill  
Title: Strategies for embedding engineering for sustainable development in undergraduate teaching
- iv. Paper #19 Author(s): Manoj Ravi  
Title: Asking the engineering educators: prevalence of SDGs in the engineering curriculum & analysing accreditation requirements

### Session F. Curriculum & Programme Development

- i. Paper #13 Author(s): Pranav Chintalapati and Naoko Ellis  
Title: Fostering Inclusive Leadership through Systems Thinking and Mentorship: A Collaborative Approach in Chemical Engineering Education
- ii. Paper #21 Author(s): Pinar Omur-Ozbek, Tom Siller and Gerry Johnson  
Title: What's Wrong with "Engineering Education for Sustainable Development?" -It must be required
- iii. Paper #70 Author(s): Sarah M.C. Peers  
Title: Mathematics in Engineering Education as a catalyst for Diversity, Sustainability, and Global Impact

### Session G. Project-Based Learning & Design

- i. Paper #66 Author(s): Mari-Selina Kantanen and Katri Hendriksson  
Title: Project-based studies strengthening expertise in circular economy and responsibility– case Mechanical Engineering
- ii. Paper #91 Author(s): Gowtham N, Vidya N L, Savyasachi G K, Utpal Deka, H V Balachandra Achar and S N Prasad  
Title: Transforming Engineering Pedagogy: PBL for Creativity and Sustainable Quality Education
- iii. Paper #92 Author(s): Vidya N L, Gowtham N, Shobha Shankar, Savyasachi G K, Bhuvana S and Rakesh P M  
Title: Fostering STEM Careers for Women: A Project-Based Learning Initiative in Engineering Education

### Session H. Technology for Sustainability

- i. Paper #3 Author(s): Christian Farrelly and Shannon Chance  
Title: Leveraging BIM Technologies to Achieve Net-Zero Carbon Design and Maximise LEED Efficacy
- ii. Paper #7 Author(s): Kauser Jahan, Ying Tang and George Lecakes  
Title: WaterWorks: An Innovative Attempt at Promoting Careers in Environmental Engineering
- iii. Paper #8 Author(s): Gina Javanbakht and John Allport  
Title: Redesigning Petroleum Engineering for a Sustainable Future: Integrating Clean Energy and Biofuels into University Curriculum
- iv. Paper #37 Author(s): Laura Mueller, Niclas Meihofener, Gabriel Siemoneit and Iryna Mozgova  
Title: Introduction of Electronic Lab Notebooks in Engineering Education – Opportunities for a Cultural Change



### Session I. Engineers as Changemakers

- i. Paper #4 Author(s): Taru Konst and Johanna Krappe  
Title: Handprint of ESD – Case Universities of Applied Sciences in Finland
- ii. Paper #56 Author(s): Jose Martinez and Lizbeth Goodman  
Title: Invention before Theory: How the Practical Often Leads Theory
- iii. Paper #82 Author(s): Emily Lawson-Bulten, Jess Mingee, Connor LaSalle and Ann-Perry Witmer  
Title: Decolonizing Relationships: Moving from an Empowerment to Agency Mindset in International Engineering Interventions
- iv. Paper #46 Author(s): Vivek Ramachandran, Kate Roach and Emanuela Tilley  
Title: Weaving Responsibility into Engineering Education

### Session J. Problem-Based & Experiential Learning

- i. Paper #44 Author(s): Andrea Grech La Rosa, Peter Simpson and Thomas Peach  
Title: Piloting Circular Economy Initiatives in an Educational Maker Space
- ii. Paper #69 Author(s): Graham Ward, Andreas Georgakarakos, Sarah Peers and Bertie Knight  
Title: Sustainable and Equitable Energy Systems: Engineers as Changemakers and Innovative Pedagogy in Engineering Education

### Session K. Capacity Building within Higher Education

- i. Paper #6 Author(s): Jennifer Mueller, Mark Minster and Rebecca DeVasher  
Title: Building a Community of Practice to Facilitate Integration of Sustainability into Higher Education Curriculum
- ii. Paper #31 Author(s): Nicole Kirk, Jessie Wong, Rehan Shah and Anne Preston  
Title: Student Researchers Breaking Barriers: Exploring How STEM Can Drive Education for Sustainability in UK Higher Education
- iii. Paper #49 Author(s): Marianna Malkamäki and Meeri Karvinen  
Title: Organisational support in Driving Sustainability Integration in Engineering Education

### Session L. AI for Sustainability

- i. Paper #62 Author(s): Princewill Ikpeka and Mary Richards  
Title: AI-Enhanced TPACK for Transdisciplinary Programs in Higher Education
- ii. Paper #68 Author(s): Edmond Byrne  
Title: Asymmetrical Innovation; AI as educational disruptor or as ethical-ecological tinderbox?
- iii. Paper #5 Author(s): Swagata Sarkar, Harini K, Sri Pavatharani S and Varsha G S  
Title: Automated Trash Boat Using AI

### Session M. Ethics and Responsibility in Engineering

- i. Paper #12 Author(s): Cecilia Gustavsson, Ali Al-Adili, Robert Frost and Andreas Solders  
Title: Introducing ethical sustainability dilemmas in nuclear engineering education
- ii. Paper #20 Author(s): Richard Fenner  
Title: Dangers of the technical fix, techno-optimism, technological inevitability and the stories we tell
- iii. Paper #88 Author(s): Riadh Habash  
Title: Course-Based Undergraduate Research through the Lens of Ethics and Sustainability for Equity- and Quality-Driven Education

### Session N. Transformative & Deep Learning Approaches

- i. Paper #52 Author(s): Dai Morgan, Jennifer Ahern, Edmond Byrne, Naoko Ellis and Derek Gladwin  
Title: Fostering Hope in Engineering for Sustainable Development
- ii. Paper #61 Author(s): Daniel Pargman, Elina Eriksson, Arjun Rajendran Menon, Minna Laurell Thorslund and Aksel Bjørn-Hansen  
Title: Navigating Complexity and Embracing Uncertainty: Teaching Participatory Leadership in Engineering Education
- iii. Paper #26 Author(s): Gearold Johnson and Thomas Siller  
Title: Degrowth by design rather than disaster
- iv. Paper #86 Author(s): Claudia Moorhouse  
Title: The impact of misaligned ideals within engineering faculties on student disillusionment

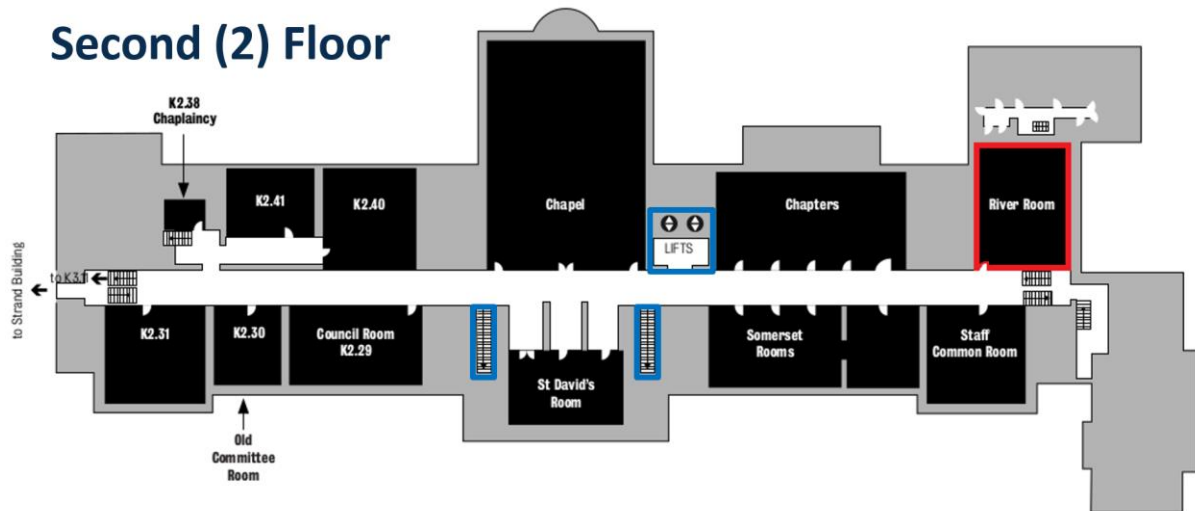
### Session O. Sustainability in Industry & Practice

- i. Paper #32 Author(s): Maria Jobenius, Anne-Katrin Peters and Lena Gumaelius  
Title: Sustainability change agents in business transformation - empowerment through training
- ii. Paper #51 Author(s): Stephen Hunt, Diana Martin, John Mitchell and David Guile  
Title: Graduate insights on the development and use of sustainability skills
- iii. Paper #59 Author(s): Robert Hesketh, Barnabas Gao, Thien An Pham, Emma Padros, Andrew Malec, Amarelys Rios, J. Patterson, C. S. Slater and K. M. Yenkie  
Title: Academic and Industrial Collaboration for Sustainability and Process Efficiency

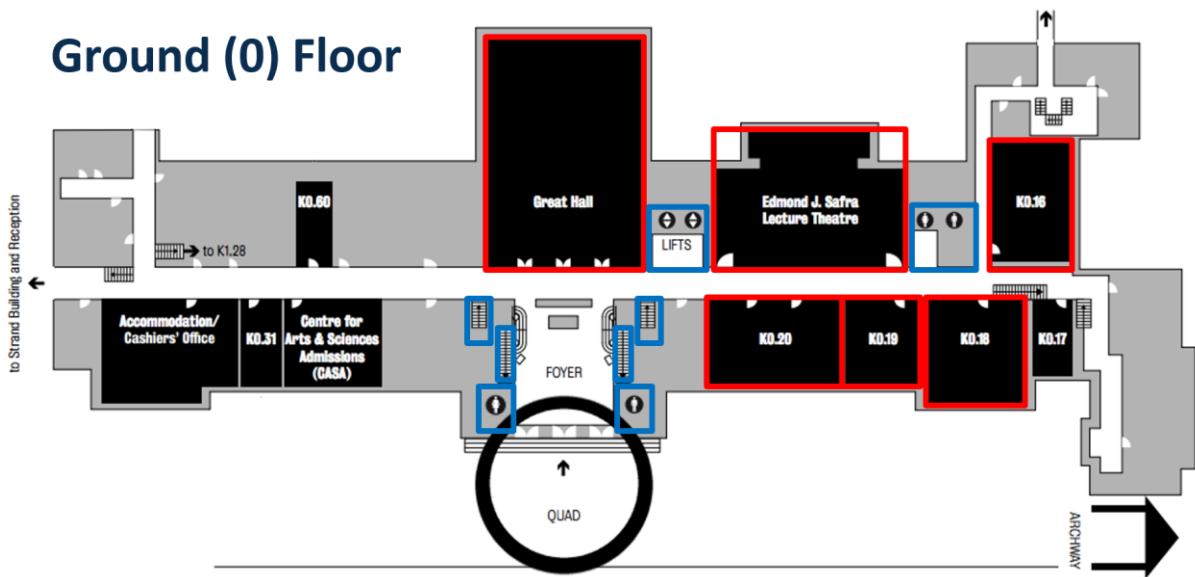
### Session P. Curriculum & Programme Development

- i. Paper #57 Author(s): Dr Maryam Masood, Lauren Schrock and Asima Iqbal  
Title: Embedding sustainability in engineering education through a multi-disciplinary postgraduate research methods module
- ii. Paper #58 Author(s): Jan Andersson and Karin Stensjö  
Title: Integrating Sustainability Competencies into Molecular Biotechnology Engineering Education: A Strategic Approach
- iii. Paper #67 Author(s): Bruna Sá Couto, Jordi Segalàs and Joana Maia Dias  
Title: Sustainability Learning Outcomes in Engineering: A Review of Concepts and Course differences

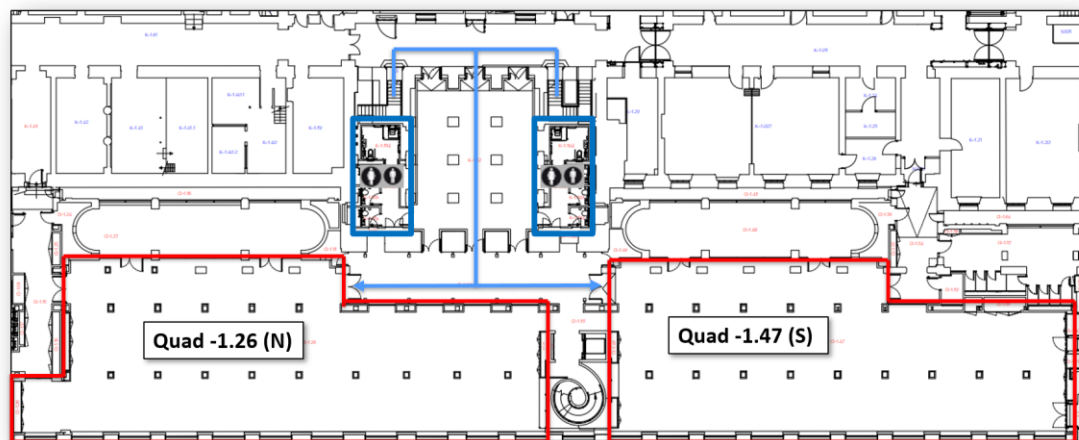
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