

9am - 3pm, Tuesday 25 November

Culture & Curriculum

Hosted by UNSW Engineering

On campus only: UNSW Scientia building

[Register](#)

Opening Sessions (8.30am – 10.30am)

8.30am	Registration (Scientia Foyer)
9.30am	Engineering's education festival event "Culture & Curriculum" (Tyree Room) Welcome to Country ceremony by Uncle Ron Timberly Opening address by A/Prof. Maurice Pagnucco
9.45am	Keynote (Tyree room) "Engineering with Country: Culture Curriculum and the Future of Knowledges at UNSW" Opening Keynote by Prof. Leanne Holt, Deputy Vice-Chancellor Indigenous, UNSW Have you ever wondered how Indigenous knowledges could transform the way we teach and understand engineering? Join Professor Leanne Holt for a thought-provoking keynote talk, Engineering with Country: Culture, Curriculum and the Future of Knowledges at UNSW Sydney. This keynote explores how Indigenous knowledges can enrich engineering education through culture, sovereignty and identity, drawing on case studies that reveal sophisticated environmental and spatial insights. It challenges universities to recognise Indigenous peoples as sovereign knowledge authorities and provides practical guidance for embedding these knowledges respectfully while fostering a culture that values Indigenous sovereignty, longevity and relationality.
8.30am	ChallENG Student Project stalls (Leighton Hall)

Mid-morning Sessions(10.30am – 11.30am)

Session 1, Gallery 1 Integrating AI into curriculum	
10.30am	Designing Programming Projects in the Era of LLMs Presenter: A/Prof. Yang Song, Prof. Maurice Pagnucco
10.45am	Increasing Student Engagement with an AI Tutor Presenter: Prof Vijay Sivaraman, Dr Minzhao Lyu
11.00am	Juno AI: Lessons learnt building sovereign, pedagogical AI models Presenter: Dr Sasha Vassar, Dr Jake Renzella, Mr Lorenzo Lee Solano
11.15am	Applying Cognitive load theory to Gen AI usage Presenter: A/Prof. Nadine Marcus, Dr Sasha Vassar
Session 2, Gallery 2, A Culture of Learning	
10.30am	Empowering Educators: CVEN’s Ongoing Pedagogical Innovation Series Presenter: Dr Khalegh Barati, A/Prof Steven Davis
10.45am	Making learning accessible, meaningful, & intuitive for students Presenter: A/Prof Michael Kasumovic
11.00am	How Culture Brings Analytics to Life: Storytelling Pedagogy Presenter: Dr Chedia Dhaoui
11.15am	Pioneering immersive learning of cultural values and local knowledge for humanitarian engineers using ICON simulator in VR environments Presenter: A/Prof Laura Montano, Graham Hannah, Tim Dodds

Mid-morning Sessions (10.30am – 11.30am)

Session 3, Peter Farrell room, Curriculum for a wider purpose	
10.30am	EF Advocacy: Protecting Small Programs Presenter: A/Prof Craig Roberts
10.45am	White Hat AI Hacking of Assessments: Strengthening Assessment Integrity through AI Literacy Presenter: Dr Swapneel Thite, Giordana Orsini Florez
11.00am	Curriculum Pathways & Cultural Realities: Optimising UNSW Programs with Process Mining Presenter: Dr Rachid Hamadi
11.15am	Scaffolding Authentic Group Projects in Biocompatibility: Building Collaboration, Professional Identity, and Responsible Use of AI Presenter: Dr Nona Farbehi
Morning Workshop, Gonski seminar room (10:30am – 11:30am)	
10.30am	Enhancing Education with Gamification Facilitator: Dr Paul Hunter Gamification - the process of using game-like elements in situations where they are not usually found - has been shown to improve educational outcomes by promoting student engagement and enjoyment. This workshop will introduce educators to some principles of game design and gamification; and then give them an opportunity to explore gamifying one aspect of their teaching.

Mid-morning Sessions (11.30am – 12.30pm)

Panel | Tyree room

Panel discussion – Culture and Curriculum

Hosted by A/Prof. Julian Cox

Engineering education is deeply shaped by culture—of disciplines, institutions, professions, and communities. This panel brings together diverse voices from across our university to explore how culture both informs and is shaped by curriculum design and delivery. Through conversation among students, academics, and professional staff, we will consider how educational cultures foster belonging, professional identity, and inclusion. We will discuss how the respectful integration of Indigenous knowledges, the promotion of equity in learning, and the development of shared classroom cultures can transform both what and how we teach. The panel will also explore emerging cultural challenges—such as navigating generative AI, sustaining online and in-person communities, and designing curricula that reflect our social and professional responsibilities as engineers.

Lunch-time Sessions (12.30pm-1.00pm)

Lunch

A light lunch will be provided for educators attending the Education Festival event.

Education technology demonstrations (Gallery 1+2)

Augmented Reality Demonstration

By John-Paul Posada and Dr Darson Li

MindMade interactive AI tutor demonstration

By Mindmade

ChallENG Student Project stalls (Leighton Hall)

Visit the ChallENG student project stalls on the ground floor to see and discuss their exciting innovations.

VIP Pitch (1.00pm-2.00pm)

VIP Pitch Competition (Tyree room)

Final round VIP teams pitch their projects and the impact they have to an audience of industry partners.

Afternoon Sessions (1.00pm–2.00pm)

World café, Gallery 1+2

Three rounds of 15-minute conversations on ENG Education projects

Artificial intelligence course tutor

“Human-centered Scalable AI Video Mentors for Team-Based Learning in Large Engineering Courses.” - EFFECT Project

"NetMentor: a personalised digital teaching assistant for Computer Networks education"

"Increasing Student Engagement with an AI Tutor"

Facilitators: Dr Anam Malik, A/Prof. Yang Song, Prof. Vijay Sivaraman

Assessing large/first year courses

“Developing an automated marking system for large sized engineering courses” - EFFECT project

Facilitators: A/Prof.Beena Ahmed

Augmented reality

“Harnessing Augmented Reality for Enhancing Engineering Education: A Blended Learning Approach” - EFFECT project

Facilitators: Dr Darson Li, John Paul Posada

Benchmarking AI models for education

“Design, Development and Publication of Pedagogical Benchmarks for assessment of LLM use in STEM-Focused courses” - EFFECT

Facilitators: Dr Sasha Vassar

Competencies and sustainable development goals

“Development of a Comprehensive Framework to Align Students’ Performance with PE Competencies and SDGs in Engineering Education” - EFFECT project

Facilitators: Dr Divya Jayakumar Nair

Exploring Engineering Education Research (EER) through AAEE/ACED2024 and EFFECT2025 grants

“Grit and Determination: Phenomenological Insights into Women Engineering Students’ Journeys” - EFFECT project

Facilitators: Dr Rita Prestigiacomo, Dr Firoozeh Babayekhorasani

Afternoon Sessions (2.00pm – 3.00pm)

Session 5, Gallery 1, Hands on Curriculum Experiences	
2.00pm	Engineering Pathways: Collaborating Hands-on Workshops for Aspiring Engineers Presenter: Dr Irene Renaud-Assemat, Dr Wendy Lee, Joanne Zreika, Peter Crosby
2.15pm	Transforming Biomedical Engineering Education Through Accessible Hands-On Learning Presenter: Dr Ulises Aregueta Robles, A/Prof Lauren Kark
2.30pm	From Theory to Practice: Using Authentic Applications and Coding to Enhance Engineering Education Presenter: A/Prof Meead Saberi Kalee
2.45pm	Virtual Exchange – Air Pollution Management from New South Wales, Australia to Sao Paolo, Brazil Presenter: Dr Ruth Fisher
Session 6, Gallery 2, A Culture of Feedback	
2.00pm	Gamifying Mathematical Concepts Presenter: Dr Paul Hunter, Priya Leedman, Charlotte Masuda
2.15pm	LangLingual: Supporting Students’ Language Learning Using LLMs Presenter: Dr Sonit Singh
2.30pm	Don’t Give Them a Fish, Teach Them How to FISH Presenter: Dr May Lim, Yuchao Jiang, Yuekang Li, Dr Darson Li, Prof Stuart Prescott
2.45pm	Automating Flexible Partial Marking & Meaningful Feedback for Formative Assessments in Large Electrical Engineering Courses Presenter: Mr Chia-Wei Cheng, Ms Charlotte Han

Afternoon Sessions 2 (2.00pm – 3.00pm)

Afternoon Workshop - Gonski Seminar Room

From Detection to Integration: Embedding Ethical AI Literacy in Engineering Education (White Hat Project Insights)

Facilitators: Dr Swapneel Thite, Giordana Orsini Florez, Nasrin Danish

Students are already using AI. Will we ignore it, or guide them to use it ethically and effectively for learning, efficiency and professional practice?

This interactive 1-hour workshop draws on the White Hat AI Hacking of Assessments Nexus project to move beyond detection and assessment redesign, towards context specific and holistic integration of AI literacy across engineering courses. Not every course requires AI integration in the same way, but where opportunities exist, embedding ethical AI literacy is essential to ensure students engage productively rather than in ways that risk undermining learning or academic integrity. Addressing AI use head on not only safeguards learning but also prepares students for professional contexts where AI is rapidly reshaping engineering work far beyond writing tasks.

Through AI use for learning exemplars, including custom GPTs in postgraduate engineering courses, and guided discussion, participants will map opportunities to use AI for learning, promote students' responsible and ethical AI engagement, and align innovations with assurance of learning principles. By the end of the session, participants will have identified practical strategies to begin embedding AI literacy across their courses, supporting students to develop the critical skills and professional readiness required in an AI-rich world.

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Engineering with Country: Culture, Curriculum and the Future of Knowledges at UNSW

Presenter: Prof. Leanne Holt

This keynote examines the immersion of Indigenous knowledges within engineering curricula through the intertwined lenses of culture, sovereignty and identity. While engineering often seeks clear exemplars or proven models before adopting new approaches, Indigenous knowledge systems offer millennia of evidence-based engineering practice, grounded in observation, adaptation and relational accountability. Using case studies this keynote demonstrates that Indigenous knowledges contain sophisticated environmental and spatial engineering insights.

Anchored in an Indigenous theoretical frame, this presentation challenges

universities to reposition Indigenous peoples not as subjects of a history of trauma, but as sovereign knowledge authorities whose intellectual traditions predate and enrich contemporary engineering. The address offers practical guidance for engineering educators seeking to respectfully embed Indigenous knowledges in curriculum design and suggests pathways towards a university culture that recognises Indigenous sovereignty, longevity, and relationality. The keynote will demonstrate how Indigenous and Western engineering knowledges can interact and strengthen one another when guided by deep respect and shared purpose.



Prof. Leanne Holt

Deputy Vice-Chancellor Indigenous,
University of New South Wales

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Designing Programming Projects in the Era of LLMs

Presenter: A/Prof. Yang Song, Prof. Maurice Pagnucco

Large Language Models (LLMs) such as ChatGPT are especially good at writing programs and have transformed how students approach programming tasks. While these tools can accelerate programming and software engineering in general, they also raise challenges for educators: if students can generate working programs in seconds, how do we ensure they still learn core skills like problem decomposition, algorithmic thinking and debugging? Moreover, how do we ensure programs are correct, efficient and secure?

This talk draws on our experience teaching COMP9491 (Applied AI) and COMP9517 (Computer Vision), as well as recent literature on the impact of AI in education, to explore strategies for

designing group-based project assignments that foster genuine learning in the age of AI. These strategies include better contextualisation of projects to promote curiosity, encouraging exploratory experiments, incorporating milestone check-ins and peer code reviews, assessing students' analysis of method components and design choices, and introducing tasks that critique and extend AI-generated solutions. Through such approaches, our focus shifts from final solutions and software performance to the process of project development, enabling us to design assignments that encourage students to engage critically with AI tools while developing the deeper understanding required for real-world problem solving.



A/Prof. Yang Song
Associate Professor, Computer Science & Engineering



Maurice Pagnucco
Professor, Computer Science & Engineering
Deputy Dean (Education), Faculty of Engineering

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Increasing Student Engagement with an AI Tutor

Presenter: Prof. Vijay Sivaraman, Dr
Minzhao Lyu

In this talk, we share our experience introducing a course-specific AI tutor across four courses, developed in collaboration with Bloom AI, for Electrical Engineering & Telecommunications students at UNSW. While tools such as ChatGPT are increasingly used by students, recent research shows that generic AI can harm learning by encouraging over-reliance and passive consumption. Our approach instead used a curated AI tutor built directly on the course materials, including lecture transcripts, readings, and assessments, and designed with a teaching persona that stimulates curiosity and reasoning rather than just giving away answers.

We observed that engagement rose most when the lecturer actively introduced and normalised the AI tutor's use. Students interacted more deeply with content and asked fewer repetitive clarification questions via email, while reporting high satisfaction with the learning experience. These findings highlight that effective AI integration requires tools built specifically for learning. Purpose-designed AI tutors have pedagogical guardrails, provide visibility and insights over student usage, and align to course outcomes. Looking ahead, we suggest some future avenues of exploration for the use of AI tutors at UNSW, including integrations, cross-course implementation, and multi-modal capabilities.



Prof. Vijay Sivaraman

Professor, Electrical Engineering & Telecommunications



Dr Minzhao Lyu

Lecturer, Electrical Engineering & Telecommunications

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Juno AI: Lessons learnt building sovereign pedagogical AI models

Presenter: Dr Sasha Vassar, Dr Jake Renzella, Mr Lorenzo Lee Solano

While Artificial Intelligence in education offers significant potential for personalised learning, its responsible implementation is complex. This presentation details a case study of JunoAI, an Australian EdTech venture funded by the Australian Economic Accelerator, which is developing specialised Large Language Models (LLMs) for education. We aim to share lessons learned and seek critical feedback to co-create a roadmap for impactful and safe AI in educational settings.

Our work moves beyond generic models to construct LLMs on a foundation of established learning science and propose a benchmarking model to ensure that AI

serves educational goals. We will also discuss practical hurdles encountered when deploying JunoAI, including data privacy, ensuring equitable access, and fostering genuine teacher-AI collaboration rather than replacement. We believe technology must serve pedagogy, not dictate it.

By sharing our real-world use case, successes, and setbacks, we invite collaboration. We seek insights to refine our models and better align our tools with the nuanced needs of educators and learners globally, contributing to a shared agenda for quality, safe, and human-centered AI in education.



Mr Lorenzo Lee Solano
PhD Student Computer Science & Engineering



Dr Sasha Vassar
Senior Lecturer & Nexus Fellow
Computer Science & Engineering



Dr Jake Renzella
Senior Lecturer
Computer Science & Engineering

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Applying Cognitive Load Theory to Gen AI Usage

Presenter: A/Prof. Nadine Marcus, Dr Sasha Vassar

Cognitive load theory posits we have a limited working memory or consciousness used to acquire new information. In contrast, we have an unlimited long-term memory used to store familiar information over time, in the form of schemas. Through practice, these schemas become automated, allowing us to handle complex information with little effort. This creates a vast difference in the way experts and novices interact with domain specific information. Novices lack established schemas, relying on their limited working memory, which can lead to cognitive overload. Experts, however, use their automated schemas to bypass these limitations. This leads to the expertise

reversal effect, where instructional methods best for experts are often opposite of those best for novices. The effect has significant implications for using Generative AI in education. Novices should first focus on building foundational schemas through structured learning, as they lack knowledge to validate AI outputs. For experts, however, AI can be a powerful productivity tool. Their well-developed schemas enable informed judgments on the information GenAI provides, correcting and refining it as needed. In this talk, we discuss the expertise reversal effect with examples as well as implications for when and how it is best to use Generative AI for learning.



A/Prof. Nadine Marcus
Associate Professor
Computer Science & Engineering

Dr Sasha Vassar
Senior Lecturer & Nexus Fellow
Computer Science & Engineering



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Empowering Educators: CVEN's Ongoing Pedagogical Innovation Series

Presenter: Dr Khalegh Barati,
A/Prof Steven Davis

In early 2024, the School of Civil and Environmental Engineering (CVEN) launched a successful initiative to share the latest educational and pedagogical innovations with CVEN staff and the wider Faculty of Engineering. Led by Associate Professor Steven Davis and Dr. Khalegh Barati, Nexus Fellow of CVEN, with support from Professor Richard Stuetz and Associate Professor Mohsen Kalantari, the initiative promotes practical, evidence-based teaching approaches that enhance student learning and engagement.

Dr. Barati collaborates with Nexus Fellows across UNSW to identify innovations relevant to engineering education and invites them to present

at CVEN. Each term, four one-hour hybrid seminars are held on Wednesdays in Weeks 2, 4, 8, and 10, from 12–1pm. Presentations are followed by interactive Q&A discussions and feedback, with lunch provided for in-person attendees.

Since its inception, the program has hosted over 20 seminars, including 12 in 2025, each attracting 25–30 participants. Weekly announcements with presentation abstracts are shared in advance. The initiative has received highly positive feedback, increasing staff awareness of contemporary teaching methods, stimulating dialogue on educational innovation, and fostering collaboration and networking across the faculty.



Dr Khalegh Barati
Lecturer & Nexus Fellow
Civil & Environmental Engineering

A/Prof. Steven Davis
A/Professor & Associate Head (Education)
Civil & Environmental Engineering



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Making learning accessible, meaningful, & intuitive for students

Presenter: A/Prof Michael Kasumovic

We all know that students must now balance competing interests in their lives, making it difficult for them to find time to learn. In addition to life's challenges, social media and the internet are better at grasping and holding student attention relative to educational content due to their ability to entertain. In this talk, I will discuss some new 'social media-like' approaches that I am using to engage students in learning in and outside the classroom that makes it easier for students to learn at their own pace. I'll be using this approach as we go through the talk.



A/Prof Michael Kasumovic
Associate Professor, Biological, Earth & Environmental Sciences

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How Culture Brings Analytics to Life: Storytelling Pedagogy

Presenter: Dr Chedia Dhaoui

Analytics courses are often perceived by students as highly technical and intensive, which can lead to disengagement—particularly among business students with limited experience in analytics. To address this challenge, I have developed a storytelling pedagogy that frames analytics not merely as a set of techniques for capturing and analysing data, but as a powerful way of making sense of this data to generate value and derive actionable insights for business decision-making. Storytelling enables students to understand abstract concepts through personal experiences, cultural contexts, and authentic business narratives, transforming the classroom into an inclusive, accessible, and engaging learning environment. In my teaching, I design hands-on activities using real-life international case studies,

particularly from social media platforms that students may not encounter in their everyday lives. For example, in Social Media Analytics, I integrate platforms such as Taobao and WeChat, encouraging international students to share their personal experiences with these platforms so that their peers can learn. When conducting sentiment analysis, I showcase how cultural background, linguistic nuance, and tone influence the interpretation of emotions conveyed in online conversations. This approach not only strengthens students' understanding of analytics but also emphasises the significance of culture and language in shaping data-driven insights. Ultimately, this pedagogy promotes active participation, deepens learning, and equips students with the skillsets highly demanded in the future workplace.



Dr Chedia Dhaoui
Senior Lecturer, Information Systems &
Technology Management

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Pioneering immersive learning of cultural values and local knowledge for humanitarian engineers using ICON simulator in VR environments

Presenter: A/Prof. Laura Montano, Graham Hannah, Tim Dodds

ENGG3001 'Fundamentals of Humanitarian Engineering' introduces Year 3 and Year 4 engineering students to the principles of appropriate and sustainable technologies and procedures required for promoting the wellbeing of vulnerable communities worldwide. Engineering students often prioritise technical solutions based on their expertise while overlooking the importance of local knowledge, cultural values and human-centred design, which are critical components in humanitarian engineering. To address this gap, this year we introduced ICON (An immersive conversation Sim utilising AI) in a virtual reality (VR) activity. The tool provided students with a safe and immersive environment to simulate a conversation with an Indigenous Fijian leader, allowing them to explore how to codesign technologies that are both appropriate and

sustainable for the community. This was the first ICON session implemented for the entire cohort of students in an engineering course. The session emphasised that failing to actively listen or rushing to propose solutions led to failure in connecting with the community and ultimately resulted in unsuccessful outcomes. Student feedback revealed that the experience helped them in their understanding of the distinctions between traditional and humanitarian engineering practices and highlighted the significance of cultural sensitivity and community engagement in engineering design. The VR session provided a safe environment to learn from failure, preparing the students with new skills when exploring design opportunities in humanitarian contexts.



A/Prof Laura Montano

Associate Professor, Civil & Environmental Engineering

Graham Hannah

Manager of Immersive Technology
PVC Education



Tim Dodds

Immersive Technology Specialist
PVC Education

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EF Advocacy: Protecting Small Programs

Presenter: A/Prof Craig Roberts

In a world of commodified education, small programs are vulnerable to university administrations looking to rationalise their course offerings. Heads of small programs must therefore advocate to protect their discipline. EF academics are best placed to do this and should take a leadership role.

This fast-paced presentation will use the BE(Surveying) program as a case study to demonstrate strategies to hopefully avoid regrettable decisions by university administrators.

Receptiveness to structural change, course delivery, relationships with the target profession that graduates will supply, developing talking points highlighting the value of a program to the wider community and communication within the university and beyond are all conferred.

Reference is made to a recent publication by Emeritus Professor Graeme Turner regarding universities, politics and the public good.



A/Prof Craig Roberts

Civil and Environmental Engineering

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Integrating (Gen) AI into Curriculum

Presenter: A/Prof Mohit Shivdasani, Dr Swapneel Thite, Giordana Orsini Florez, Nasrin Danish

This session highlights how generative AI was holistically embedded throughout a biomedical engineering course to enhance learning, reflection, and responsible AI use. Working as a collaborative team, Dr. Swapneel Thite, Giordana Orsini Florez, and Nasrin Danish supported Associate Professor Mohit Shivdasani in integrating AI across assessments, feedback processes, and learning activities. In the session, Mohit will share his experience implementing

these changes, and the team will reflect on student feedback gathered after the course, offering insights into how learners engaged with AI and how it shaped their confidence and understanding. The session will conclude by inviting participants to consider how these insights can inform a coordinated, program-level approach to embedding AI meaningfully and consistently across the curriculum.



A/Prof Mohit Shivdasani
Associate Professor, Biomedical Engineering



Dr Swapneel Thite
Educational Developer, ENG Education



Giordana Orsini Florez
Senior Educational Developer, ENG Education



Nasrin Danish
KoD Platform Lead, Strategic Projects

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Curriculum Pathways & Cultural Realities: Optimising UNSW Programs with Process Mining

Presenter: Dr Rachid Hamadi

This presentation shares early findings from an ongoing project that uses process mining to explore how students navigate academic programs at UNSW. While curricula are designed with structured progression in mind, students often experience these pathways differently due to cultural backgrounds, course availability, prerequisite constraints, and personal circumstances. By analysing enrolment, progression, and performance data across multiple programs, the project aims to uncover hidden patterns, identify bottlenecks, and highlight points of delay or dropout. These insights will inform curriculum adjustments that better support diverse student needs and improve progression

and completion rates. The project will also contribute to UNSW's upcoming transition to a semester-based calendar in 2028. By identifying structural challenges now, we can begin revising programs to ensure they are culturally inclusive, pedagogically sound, and ready for the new academic model. Although the project is still in progress, preliminary results suggest strong potential for data-informed improvements to curriculum design, academic advising, and student support. The talk will outline the methodology and share emerging insights on how curriculum reform can better reflect the cultural and structural diversity of our student population.



Dr Rachid Hamadi
Senior Lecturer, Computer Science &
Engineering

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Scaffolding Authentic Group Projects in Biocompatibility: Building Collaboration, Professional Identity, and Responsible Use of AI

Presenter: Dr Nona Farbeni

BIOM9332 or Biocompatibility is taught to both undergraduate and postgraduate biomedical engineering students, presenting unique opportunities and challenges in course design. To support diverse levels of knowledge and experience, we implemented a scaffolded major project that builds progressively across multiple elements: a report on individual ISO10993 subsection test, a group progress presentation, a group report, and a final presentation. This structure enables students to engage deeply with technical content while developing collaboration and communication skills essential to professional identity formation.

The scaffolding also supports inclusivity in a mixed cohort, allowing undergraduates to learn from more experienced peers while postgraduate students consolidate

leadership and mentoring skills. Following participation in the Course Design Institute, I refined assessment practices to better capture individual contributions within group work by inviting external reviewers, ensuring fairness across different levels of the cohort.

A current challenge is the growing influence of generative AI on student work. While AI has potential as a learning tool, overreliance risks undermining authenticity in reporting and presentations. In this talk, I will brainstorm strategies under consideration for guiding students toward responsible engagement with AI, while preserving the integrity of assessment.

This case study illustrates how thoughtful course design can support diverse student cohorts, foster inclusive learning communities, and address evolving cultural dimensions of higher education.



Dr Nona Farbehi

Senior Lecturer, Biomedical Engineering

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Workshop - Enhancing Education with Gamification

Facilitator: Dr Paul Hunter

Gamification - the process of using game-like elements in situations where they are not usually found - has been shown to improve educational outcomes by promoting student engagement and enjoyment. This workshop will introduce educators to some principles of game design and gamification; and then give them an opportunity to explore gamifying one aspect of their teaching.



Dr Paul Hunter

Lecturer, Computer Science & Engineering

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Engineering Pathways: Collaborating Hands-On Workshops for Aspiring Engineering

Presenter: Dr Irene Renaud-Assemat, Dr Wendy Lee, Joanne Zreika, Peter Crosby

Outreach is central to UNSW's mission to widen participation in higher education and diversify our engineering and STEM cohorts. This Faculty of Engineering-funded EFFECT project developed engaging, hands-on learning experiences for Year 5–6 and Year 11–12 students from underrepresented backgrounds. The project focuses on developing portable kits and remote lab access that enable students to participate in real-world engineering activities both

on-campus and in-school. These resources are modular, sustainable, and discipline-adaptable, with simpler versions for primary students and more advanced applications for HSC cohorts.

Two complementary resources were created: portable engineering kits for in-school visits and remote laboratory access that allows students to operate real equipment online through an inverted pendulum workshop.



Dr Irene Renaud-Assemat
Senior Lecturer, Mechanical & Manufacturing Engineering



Dr Wendy Lee
Lecturer & Nexus Fellow, Electrical Engineering & Telecommunications



Joanne Zreika
Final-Year Student, Mechanical & Manufacturing Engineering



Peter Crosby
Student, Mechanical & Manufacturing Engineering

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Transforming Biomedical Engineering Education Through Accessible Hands-on Learning

Presenter: Dr Ulises Aregueta Robles,
A/Prof Lauren Kark

Biomedical engineers must assess multiple aspects of candidate materials intended for medical devices, integrating concepts from materials science, mechanical testing, and cellular biology. A persistent challenge in biomedical engineering education is providing students with practical, hands-on experiences across these disciplines. While ideal training would involve access to biomaterial fabrication facilities, mechanical testers, and cell culture laboratories, such infrastructure is often impractical and prohibitively expensive, resulting in primarily theoretical instruction.

BIOM9310 was developed to bridge this gap by combining theoretical foundations with experiential learning opportunities. To achieve this, a series of innovative teaching kits were

designed to simulate key laboratory processes within a traditional classroom setting. These kits include in-house fabricated mechanical testers, biomaterial fabrication setups, and simplified cellular compatibility assays, enabling students to design, fabricate, and evaluate their own biomaterials without requiring specialised facilities.

By incorporating these teaching kits, BIOM9310 provides an accessible, cost-effective, and engaging learning experience that empowers students to apply interdisciplinary knowledge in a hands-on context. This approach fosters deeper understanding, encourages problem-solving, and offers a scalable model for integrating practical biomedical engineering education in resource-limited settings.



Dr Ulises Aregueta Robles
Lecturer, Biomedical Engineering



A/Prof Lauren Kark
Associate Head (Education), Biomedical Engineering

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From Theory To Practice: Using Authentic Applications and Coding to Enhance Engineering Education

Presenter: A/Prof Meead Saberi Kalee

This presentation reflects on the introduction of real-world practices into an undergraduate course on transport networks, moving beyond simple theoretical examples to more authentic applications. Using pre-prepared Python code in Google Colab, students explored models of the Gold Coast network in Australia and the Sioux Falls network in the United States. The activity aimed to make abstract concepts more accessible by showing how they operate in practice through coding exercises and visual outputs. A thematic analysis of student feedback highlighted

strong appreciation for the practical relevance, coding experience, and visualisations, while also suggesting improvements such as clearer links between code and lecture content, more step-by-step guidance, and troubleshooting support. The experience illustrates both the value and challenges of integrating real-world examples into engineering education. It offers lessons on how to scaffold coding-based activities for beginners while still engaging advanced learners through authentic case studies.



A/Prof Meead Saberi Kalee

Associate Professor, Civil & Environmental Engineering

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Virtual Exchange – Air Pollution Management from New South Wales, Australia to Sao Paolo, Brazil

Presenter: Dr Ruth Fisher

Students in CVEN4706 Air Quality and Pollution, participated in a Virtual Exchange, connecting students from UNSW (Australia) and UNESP (Brazil) in a comparative study of air pollution management across New South Wales and São Paulo. Through a structured, multi-week program, students explore the legal frameworks, monitoring technologies, and contextual factors influencing air quality in their respective regions. The exchange is facilitated via Padlet, enabling asynchronous cultural and academic interaction. Students engage in ice-breakers, share weekly reflections, and collaborate on co-created outputs including flyers and video presentations. Each group investigates a specific pollutant—such

as PM2.5, ozone, or SO₂—producing an A3 fact sheet and a 6-minute comparative video over a period of 7 weeks. These outputs highlight differences in regulation, industry impact, and air quality trends in the region as well as fostering global awareness of environmental issues and management. The virtual exchange model promotes active learning, cross-cultural communication, and real-world relevance in engineering education. It empowers students to critically assess environmental challenges while developing teamwork and digital collaboration skills. The project exemplifies how virtual exchange can enrich curriculum and prepare students for global professional contexts.



Dr Ruth Fisher

Senior Lecturer, Mechanical &
Manufacturing Engineering

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Gamifying Mathematical Concepts

Presenter: Dr Paul Hunter, Priya Leedman, Charlotte Masuda

Gamification is the process of adding interactive elements (games) to an environment not usually associated with games to promote engagement, interest and motivation. In this talk we will demonstrate two games being developed to help teach mathematical concepts.



Dr Paul Hunter

Lecturer, Computer Science & Engineering

Priya Leedman
Student, Computer Science & Engineering



Charlotte Masuda
Student, Computer Science & Engineering

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LangLingual: Supporting Students' Language Learning Using LLMs

Presenter: Dr Sonit Singh

In this talk, I will present on the recently completed project, named LangLingual, which is a conversational agent for supporting university students' language learning. The project focussed on a personalised, exercise-oriented language learning tool powered by Large Language Models. The system is designed to provide real-time, grammar-focused feedback, generate context-aware language exercises and track learner proficiency over time.



Dr Sonit Singh

Lecturer, Computer Science & Engineering

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Don't Give Them a Fish, Teach Them How to FISH

Presenter: Dr May Lim, Yuchao Jiang, Yuekang Li, Dr Darson Li, Prof Stuart Prescott

When we give students feedback, how many days do we feedback them for? This question has guided recent innovations within UNSW Engineering, where a new approach to feedback has been trialled with the aim of making it more timely, iterative, and student-centred. Traditionally, feedback in higher education has often been a one-off event, provided at the end of an assessment, limiting its usefulness for students' ongoing learning. At UNSW Engineering, we have sought to disrupt this pattern by experimenting with feedback that is delivered in multiple stages across the assessment cycle, blending formative and summative opportunities. This present work outlines an EFFECT grant supported initiative

that leverages digital platforms and structured peer-to-peer engagement to create a feedback "loop" rather than a single endpoint. The approach allows students to receive, reflect upon, and act on feedback progressively, enhancing their capacity to close the gap between current and desired performance. Early findings suggest that this method not only improves student outcomes but also increases engagement with feedback itself, reframing it as a conversation rather than a static product. By rethinking when and how feedback is given, UNSW Engineering is working towards a model of assessment that better supports student learning in real time.



Dr May Lim

Senior Lecturer & Nexus Fellow,
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Automating Flexible Partial Marking & Meaningful Feedback for Formative Assessments in Large Electrical Engineering Courses

Presenter: Mr Chia-Wei Cheng, Ms Charlotte Han

Enrolment in introductory-level electrical engineering courses has grown significantly over recent years. Course conveners are increasingly relying on online assessment platforms with automatic marking and feedback for formative assessments to streamline the process. However, existing tools, such as Moodle Quiz and quiz tools hosted by textbook publishers, lack the flexibility to award partial marks and provide adequate feedback based on students' attempts. Teaching staff often struggle to balance efficient marking with providing meaningful feedback for learning, especially in large lower-level engineering courses. Therefore, we propose the Tandem Learning, an online assessment tool developed for electrical engineering

courses that provides flexible rubric designs aiming to help instructors automate grading and improve student learning experience.

This presentation will use progress quizzes from a first-year and a second-year electrical engineering course as case studies to outline the challenges encountered in current offerings, followed by a demonstration of how Tandem Learning can mitigate these issues. Although Tandem Learning is designed for hosting formative assessments for electrical engineering courses at this stage, we will highlight the future directions to generalise and expand the tool to a wider range of engineering disciplines.



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Workshop - White Hat AI Hacking: AI for Learning, Integrity, and Literacy

Facilitators: Dr Swapneel Thite, Giordana Orsini Florez, Nasrin Danish

Students are already using AI. Will we ignore it, or guide them to use it ethically and effectively for learning, efficiency and professional practice?

This interactive 1-hour workshop draws on the White Hat AI Hacking of Assessments Nexus project to move beyond detection and assessment redesign, towards context specific and holistic integration of AI literacy across engineering courses. Not every course requires AI integration in the same way, but where opportunities exist, embedding ethical AI literacy is essential to ensure students engage productively rather than in ways that risk undermining learning or academic integrity. Addressing AI use head on not only safeguards learning but

also prepares students for professional contexts where AI is rapidly reshaping engineering work far beyond writing tasks.

Through AI use for learning exemplars, including custom GPTs in postgraduate engineering courses, and guided discussion, participants will map opportunities to use AI for learning, promote students' responsible and ethical AI engagement, and align innovations with assurance of learning principles. By the end of the session, participants will have identified practical strategies to begin embedding AI literacy across their courses, supporting students to develop the critical skills and professional readiness required in an AI-rich world.



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