



FYiMaths 2025

Swinburne University of Technology
10, 11 July 2025

Thursday 10 July 2025	
Time	Presentation
9:30 – 10:00	Arrival, coffee/tea
10:00 – 10:15	Welcome by Professor Enzo Palombo, Dean of the School of Science, Computing and Emerging Technologies
10:15 – 11:00	The use of storytelling to create videos that support conceptual learning in upper secondary/tertiary mathematics education Paul Hernandez Martinez
11:00 – 11:30	We did weird stuff in maths class - and the students didn't riot Merryn Horrocks and Don Shearman
11:30 – 12:15	If students hate maths, we're doing it wrong Don Shearman and Merryn Horrocks
12:15 – 13:00	Lunch
13:00 – 14:00	Assurance of Learning – our current wicked problem in assessment Jo-ann Larkins
14:00 – 14:45	Hands-on practicals in first year engineering maths Kerri Morgan
14:45 – 15:15	Mastery Hurdles and Holistic Final Exam Grading in MATH1013 at ANU Griff Ware
15:15 – 15:45	Afternoon tea
15:45 – 16:15	Motivational Examples for First-Year Mathematics Students Aisha K Khan and Khurram Kamran
16:30 – 17:00	The effects of doubling the length of mandatory workshops (online) Leanne Rylands
17:00 – 17:30	Staff Perspectives on the First-Year Mathematics Transition and Lessons from Mathematics Support to Enhance Mainstream Teaching (online) Niamh Brereton
17:30	Dinner (at own cost)

Friday 11 July 2025	
Time	Presentation
9:30 – 10:15	Mathematics pathways and learning support in Australian universities (online) Linda Galligan, Michael Brickhill, Ken Ly, Joshua Peate, Leanne Rylands, Raquel Salmeron and Sophie Kennedy
10:15 – 10:45	Fostering students' connection with mathematics Sally Kuhlmann
10:45 – 11:15	Rethinking First-Year Assessment: Oral Exams and More (online) Hayden Tronnolone
11:15 – 11:45	Microcredentials: What, Who, Why R. Nazim Khan
11:45 – 12:15	Morning tea
12:15 – 12:45	Redeveloping legacy content using the Sphinx documentation generation system (online) Jim Pettigrew
12:45 – 13:15	Discussion – ARC and other grants
13:15	Finish

The workshop will be held at Swinburne University of Technology room **AMDC503** (see map below).

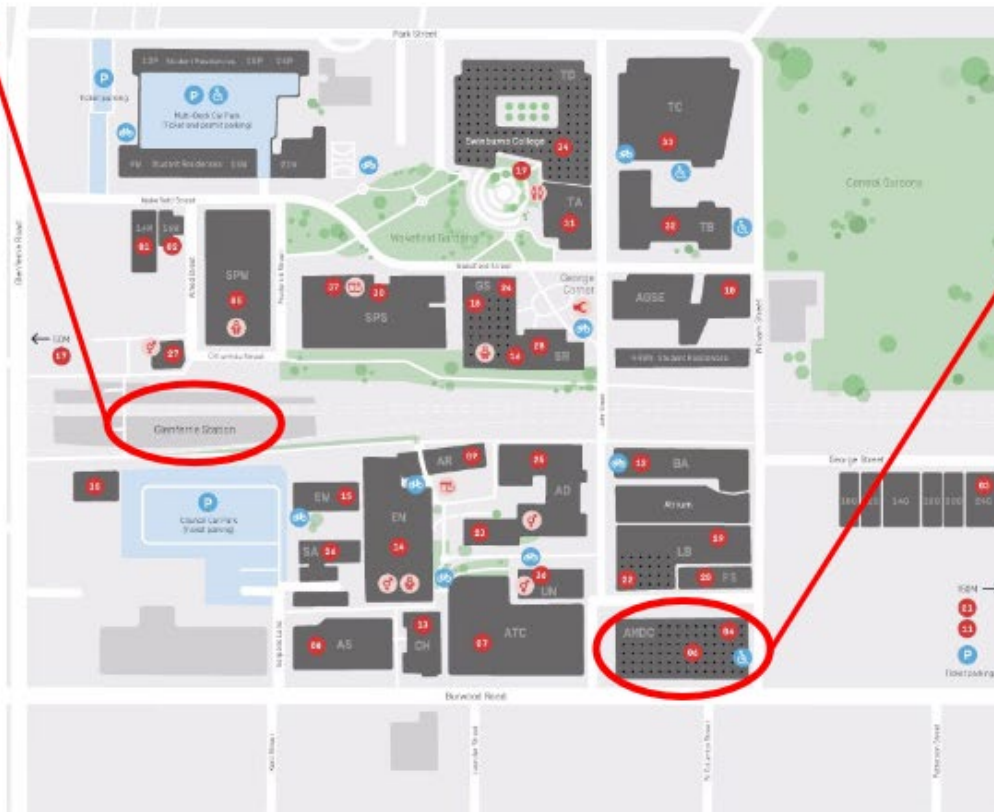
The Teams links for the workshop are:

Thursday Microsoft Teams Join the meeting now Meeting ID: 429 737 210 863 1 Passcode: Js6Mm6Ea	Friday Microsoft Teams Join the meeting now Meeting ID: 473 968 643 948 3 Passcode: AT7Hm7WJ
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First Year in Maths 2025 Workshop
 Thursday July 10th and Friday July 11th, 2025
 Swinburne University of Technology, Hawthorn Campus
 Room AMDC503

Glenferrie Train Station
 From Flinders Street Station or Southern Cross Station, take the Lilydale line, Belgrave line or Alamein line.

AMDC Building Level 5



Building	Ref	No
MW	11	11
WN	10	12
24G	24	13
AMDC	04	14
SPM	02	15
AMC	04	16
ATC	03	17
AS	02	18
AT	03	19
AGSE	04	20
AV	05	21
BA	04	22
CH	03	23
EN	03	24
DN	03	25
GS	03	26
Hawthorn Aquatic & Leisure Centre	01	27
GS	03	28
Indigenous Learning Circle	A3	29
PS	04	30
IS	05	31
LB	04	32
AD	03	33
OS	04	34
AD	03	35
SA	03	36
SA	01	37
SR	03	38
LB	04	39
SPS	02	40
TA	03	41
TB	04	42
TC	04	43
TD	03	44
ODG	01	45
UM	03	46
SPS	02	47

- All gender toilet
- Bicycle utilisation
- Food and drink
- Wash and female toilet
- Nursery
- Bicycle parking
- Accessible parking
- Parking
- Student study space



Abstracts (in presentation order)

Thursday

Paul Hernandez Martinez (Swinburne University of Technology)

The use of storytelling to create videos that support conceptual learning in upper secondary/tertiary mathematics education

This talk will aim to explore the value of storytelling, particularly digital storytelling, in the learning of mathematics. Amongst the questions to explore are: (1) What constitutes a story? (2) What are the characteristics of a story that promote engagement and learning of mathematics? (3) Which storytelling techniques can be used to create digital stories that support the conceptual learning of mathematics?

The talk is framed within international debates about the use and development of blended learning pedagogic approaches, particularly after the COVID19 pandemic, which strongly feature digital online teaching and learning resources such as videos. It focuses on upper secondary/tertiary education since there is a lack of awareness from many teachers/lecturers about the value of storytelling and how it could be used in mathematics teaching, as well as a dearth of research about this topic in higher education. It will also link the use of narrative in the teaching and learning of mathematics to contemporary research on motivation and the relevance of mathematics.

Don Shearman and Merryn Horrocks (UNSW and Western Sydney University)

We did weird stuff in maths class - and the students didn't riot

Mathematics for Engineers Preliminary is a foundational subject offered at Western Sydney University, designed to equip students with essential skills in algebra, functions, trigonometry, and calculus. A significant proportion of enrolled students begin the course with underdeveloped mathematical proficiency. The subject had a weekly structure of three hours of lectures and a one-hour whiteboard tutorial. Working within this structure we explored a variety of pedagogical interventions and in this talk we report on a number of initiatives that positively affected student learning.

If students hate maths, we're doing it wrong

As part of an ongoing study into educators' views on the teaching and learning of mathematics, statistics, and numeracy, participants were invited to discuss the units they teach and what they believe students should gain from studying them. Thematic analysis was used to examine patterns in their responses, revealing four central themes: content mastery, mathematical thinking, mathematical communication, and an appreciation of mathematics and statistics. Content mastery was divided into two sub-themes: computational fluency and conceptual understanding. In this talk, we explore the teaching practices described by educators within the framework of these themes. Specifically, we consider the question: to what extent do our current approaches to teaching support the kinds of learning outcomes we most value?

Jo-ann Larkins (Federation University Australia)

Assurance of Learning – our current wicked problem in assessment

The largest question currently facing the University sector and its governing and accrediting bodies is “How can we be sure our students can do what we say they can?” Late last year our governing body, TEQSA, required all universities to provide a submission detailing how they were responding to Generative AI whilst ensuring that University issued credentials were trustworthy representations of individual student learning and skills. The sector suggested multiple pathways including GenAI as a tool in learning, academic integrity and reimagining assessment.

In this session, I’ll summarise these broader conversations and some overall principles suggested for assessment for assurance of learning. We’ll explore some case studies of innovative assessment reforms trialled by my colleagues in my Institute including mathematics, statistics, engineering, IT, science. These include continuous monitoring of learning (usually in tutorial sessions), oral exams and vivas, “assessing messy” and authentic assessment. I’ll share the framework we’re developing for matching assessment possibilities to cohort characteristics and scaling implications.

Kerri Morgan (RMIT University)

Hands-on practicals in first year engineering maths and incorporating graduate capabilities in first year maths.

Griff Ware (ANU)

Mastery Hurdles and Holistic Final Exam Grading in MATH1013 at ANU

Significant changes to the assessment structure used in MATH1013 at ANU have been in place since the start of 2024. We have implemented two mid-semester exams that assess only a pass-level of competency: students are given multiple attempts at different versions of these exams in which they are required to meet minimum standards; they do not pass the course without meeting those standards at some stage. We have also designed the end-of-semester exam questions to be marked holistically. These changes allow us to separate the assessment of whether a student should pass MATH1013, from the assessment of whether a passing student is awarded a P, CR, D, or HD. In this talk I will discuss the effect the change has had, and the benefits and pitfalls we have encountered with this approach.

Aisha Khan & Khurram Kamran (The University of Melbourne)

Motivational Examples for First-Year Mathematics Students

First-year university mathematics courses often present students with abstract concepts that can seem disconnected from real-world applications, leading to disengagement and anxiety. This work focuses on the use of motivational examples as a pedagogical tool to bridge the gap between theory

and practice for beginner-level students. By integrating accessible, relatable problems—from everyday phenomena to foundational scientific applications—this approach aims to inspire curiosity, enhance conceptual understanding, and foster a more positive attitude toward mathematics. We illustrate how carefully chosen examples in foundational topics, such as calculus and linear algebra, can build relevance and confidence, helping students see mathematics as a dynamic and useful discipline.

Leanne Rylands (Western Sydney University)

The effects of doubling the length of mandatory workshops

Weekly mandatory workshops for a first-year engineering subject were doubled in length (from 1 to 2 hours). Feedback has been positive so far. I will present some effects of the change.

Niamh Brereton (University of Birmingham)

Staff Perspectives on the First-Year Mathematics Transition and Lessons from Mathematics Support to Enhance Mainstream Teaching

Whilst there exists a growing body of evidence reporting the challenges faced by specialist mathematics students at the transition to university, much of this research has focussed on the students’ perspectives. Through a recent study, we have explored the extent to which staff working in mathematics departments recognise these challenges and investigated whether mathematical sciences departments in higher education institutions across the UK have mechanisms in place to support students within their learning at the transition to university.

In this talk, we present the results of a thematic analysis performed on qualitative survey data from 30 distinct higher education institutions across the UK. Our analysis offers insight into the alignment between staff and student views and suggests where departments are currently working to address transitional issues. Further, we discuss potential lessons we can learn from the provision of mathematics learning support that can inform, and enhance, mainstream teaching and learning practice.



Friday

Linda Galligan (UniSQ), Michael Brickhill (Southern Cross University), Ken Ly (University of Sydney), Joshua Peate (Macquarie University), Leanne Rylands (Western Sydney University), Raquel Salmeron (USQ) and Sophie Kennedy (AMSI) (Online)

Mathematics pathways and learning support in Australian universities

Information has been gathered on numeracy/mathematics specific learning support, preparatory/bridging courses, enabling courses, mathematics support workshops and assumed knowledge statements from Australian universities. Initial results from this work will be presented.

Sally Kuhlmann (The University of Melbourne)

Fostering students' connection with mathematics

Indigenous mathematician Professor Chris Matthews developed a framework for the culturally responsive teaching of mathematics, called the *Goompi Model*. It emphasises the importance of *connecting* mathematics to students' lived experience in order to foster deeper understanding and engagement.

I will talk about some of the ways I try to cultivate this connection with mathematics in a small cohort of Indigenous students in an enabling program for the BSc at the University of Melbourne.

Building meaningful connections with mathematics can have benefits for all learners, promoting interest and engagement, and an increased sense of the relevance of maths to their lives.

Hayden Tronnolone (Finders University) (Online)

Oral exams in first-year first semester maths

R. Nazim Khan (The University of Western Australia)

Microcredentials: What, Who, Why.

Microcredentials is a new initiative to allow students to make up their high school mathematics prerequisites outside their university studies. The idea is to enable students to complete such prerequisites before enrolling in their degrees. In this presentation we will look at rationale and the structure of microcredentials, the time frame, and the pros and cons. We will survey the uptake of microcredentials in the G08.

Jim Pettigrew (UNSW) (Online)

Redeveloping legacy content using the Sphinx documentation generation system

This talk will explain how the Sphinx documentation generation system has been used to build, for online use, a set of engineering mathematics resources known as the Helping Engineers Learn Maths (HELM) workbooks. These workbooks were created in the early-to-mid 2000s by group of English universities with assistance from the Higher Education Funding Council for England, and were originally packaged as a collection of 50 inter-linked PDF documents. Since this time, various universities have begun repurposing the booklets for online use. An Australian team has joined this effort with the aim of weaving Numbas interactive questions into the content. It will build a HELM website using Sphinx. The talk will outline why Sphinx was chosen above other website development options, and provide ample demonstrations in support this choice.
