ACU
AUSTRALIAN CATHOLIC UNIVERSITY

MATHEMATICS TEACHING AND LEARNING CENTRE

Celebrating STEM Education Ignite, Innovate, Inspire

STEM teacher and leader conference

Date:
Friday 20 June 2025
8.20am – 3.40pm (Conference starts at 8.45am)

Location:
ACU Strathfield Campus, 25A Barker Road, Strathfield NSW

Cost:
$330 (incl. GST) – includes lunch, afternoon tea, certificate of participation and session notes

Group bookings:
For a group booking discount, please contact the MTLC (details below)

Contact and information:
acu.edu.au/mathsconference
Email: **mtlc@acu.edu.au**

CRICOS registered provider: 00004G | PRV12008

Disclaimer (April 2025): Information correct at time of printing. The university reserves the right to amend, cancel or otherwise modify the content without notice.

STEM teacher and leader conference

CONFERENCE DESCRIPTION

This inaugural STEM teacher and leader conference will look to the future offering strategies and ideas for leading change in STEM teaching and learning at your school.

The program has been specifically designed for practising and aspiring teachers and leaders of STEM. Workshops are presented by ACU STEM educators and others in the STEM field who work closely with teachers and leaders in schools.

FEATURES OF THE DAY

- High-quality presenters will deliver important practical advice for STEM educators in school settings.
- Choose from a rich array of workshop options catering for years F-10.
- Receive research insights in workshops complemented by practical experience, advice and strategies to support STEM teachers and leaders.
- Session notes, certificate of participation, lunch and afternoon tea provided.
- Handy location just 14km west of Sydney CBD.
- Parking is available on-site. Entry to the car park is from 25A Barker Rd Strathfield. Parking is not timed and free of charge. Should there be no available parking spots in the car park, there is ample street parking which is not timed and is free of charge.

KEYNOTE PRESENTER

Professor Robert Tai has recently joined the Faculty of Education and Arts at Australian Catholic University in Strathfield as Professor of STEM. He was a high school physics teacher for three years before entering graduate school, and was an Assistant Professor at City University of New York and Associate Professor at the University of Virginia.

While at the University of Virginia, he was the head of the Robert H. Tai Research Group, which conducted quantitative and qualitative research on major issues in science education. Professor Tai's research focuses on engagement in active learning, and how we get and keep students engaged in STEM. His studies have examined the relationship between childhood aspirations for science-related careers with graduating with college degrees in science as adults, and the identification of learning activities that most effectively engage students in science.

"Fabulous day and a great opportunity to connect with experts and like-minded colleagues."

Comment from previous participant of MTLC professional development events

STEM teacher and leader conference program

FRIDAY 20 JUNE 2025		
8.20 8.45am	REGISTRATION	
8.45 9am	WELCOME	
9 10am	KEYNOTE	
SESSION	**PRESENTER**	**TOPIC**
Keynote	**Professor Robert Tai** STEM	**Exploring differences in engaging learners in STEM** Different people like to do different kinds of activities. These differences translate into preferences for learning things in different ways. As teachers, how can we account for this in our lessons and learning activities to engage learners in active STEM learning? In this keynote, Professor Tai will highlight a framework for understanding different types of learning activity preferences within a science and STEM context. Participants will look at how different types of learning activities can be used to ignite and inspire students' learning about STEM, and how lessons can cater for students' preferences.
10.10 1.10am	SESSION A	
SESSION	**PRESENTER**	**TOPIC**
A1	**Dr Chrissy Monteleone** Mathematics	**Teacher questioning to support critical thinking in mathematics** Effective teacher questioning is pivotal in fostering critical mathematical thinking (CMT). By strategically posing questions, teachers can guide students through complex problem-solving processes and deepen their understanding of mathematics. In this workshop, Chrissy will highlight techniques for developing teacher questioning that enhances students' CMT. This session aims to equip participants with strategies to elevate questioning practices and support students in developing robust ways of working mathematically. **Audience:** Years K-6
A2	**Dr Shane Byrne** Technology	**Let's get physical with technology in STEM** Micro:bits are programmable devices that allow students to get hands-on with coding and digital making. In this workshop, Shane will lead investigations into physical computing using Micro:bits, which bring coding and physical computing to life. Participants will learn skills and ideas to integrate Micro:bits into STEM curriculum areas. Participants will engage in interactive activities whilst exploring curriculum integration and resource sharing. **Audience:** Years 3-10
11.10 11.45am	LUNCH	
11.50am 12.50pm	SESSION B	
SESSION	**PRESENTER**	**TOPIC**
B1	**Dr Matt Sexton** Mathematics	**Being more than a 'technician': Leading teachers' enactment of pedagogical reasoning in mathematics** Teaching mathematics can be complex activity, but it becomes easier when teachers are more explicit about the *what, how, when*, and *why* of their mathematics teaching practice. In this workshop, Matt will highlight pedagogical reasoning as the 'thinking in action' and the 'action in thinking' required for effective mathematics teaching and learning. Participants will learn ways of leading the development of this specialised form of reasoning so that mathematics teaching can be more informed, intentional, and impactful. **Audience:** Years K-6

B2	**Dr Sarah Taouk** Science	**Working scientifically and design and production – vehicles for STEM thinking** Scientific skills are essential for the success of any STEM activity. The 'working scientifically' and 'design and production' outcomes are platforms for teaching content that encourages students' development of critical thinking and problem-solving skills across all curriculum subjects. In this workshop, Sarah will present hands-on STEM activities centred around working scientifically and design and production. Additionally, the workshop will demonstrate how 5E inquiry-based pedagogy can enhance STEM projects and boost student engagement. **Audience:** Years K-8
12.55 1.55pm	**SESSION C**	
SESSION	**PRESENTER**	**TOPIC**
C1	**Professor Tracey Muir** STEM	**Are we there yet? Inspiring STEM through children's literature** Children's literature can provide a great medium for engaging students in STEM explorations. Appropriate and relevant children's literature has the potential to motivate students to learn and provide a context for solving STEM related problems. This workshop will explore how stories can be shared to inspire and motivate students to engage in solving real-world problems in a STEM context. Participants will be provided with examples of suitable children's literature that can be used as a hook to engage students in authentic integrated STEM experiences. **Audience:** Years 3-6
C2	**CSIRO** Science, Technology, Mathematics	**Using CSIRO's real-world science in inquiry learning to increase student engagement** Bringing real-world science into the classroom allows teachers to increase student engagement in the scientific concepts they're learning. In this workshop, CSIRO Education will model classroom applications of the Question Formulation Technique, putting participants in students' shoes to inspire inquiries based on a CSIRO mission. Participants will better understand Australia's most significant goals in science research, including practical strategies and resources that support implementing inquiry-based learning in classrooms. **Audience:** Years K-10
C3	**Little Scientists** STEM	**Empowering educators: Inspiring STEM learning for children aged 0-8 years** STEM is not only for primary and secondary students. To become STEM-literate, young children require engagement in STEM-related activities. In this workshop, participants will learn about the importance of STEM for children (0–8 years) and explore Little Scientists' Inquiry Cycle as a tool for embedding STEM learning into everyday curricula and play. Participants will explore STEM and pedagogical concepts by engaging in activities using low-cost materials that provide a child's point of view of STEM. **Audience:** Years 0-8
1.55 2.20pm	**AFTERNOON TEA**	
2.20 3.20pm	**SESSION D**	
SESSION	**PRESENTER**	**TOPIC**
D1	**Dr Karen McDaid** Science Mathematics	**What's the buzz: Exploring the science and mathematics of bees in STEM** STEM education fosters critical thinking, creativity, and problem-solving by connecting science, technology, engineering, and mathematics to real-world applications. In this hands-on workshop for teachers of Years 5 – 7, participants will explore the science and mathematics of bees, examining hexagonal honeycombs, geometry, and bee communication. Mathematical concepts covered will include tessellation, symmetry, ratio and proportion and angles. Teachers will also learn about the impact of pesticides and climate change on bee populations and the broader ecological system. **Audience:** Years 5-6
D2	**Dr Carmel Patterson and Dr Shane Byrne** STEM	**Ten–12-year-olds' STEM thinking: Integrated practices with real-world implications** Schools implemented the NESA Mathematics K–10 Syllabus in 2024. School planning and preparation on the updates to the NESA Science and Technology K-6 Syllabus will commence in 2025 with implementation from 2027 onwards. This workshop demonstrates integrated mathematical, scientific, design and technological thinking with real-world implications. Primary students can design models and simulate earthquakes when testing the engineered 'fitness' of their 3D structures with sensors programmed to determine the minimum force necessary to topple the building. **Audience:** Years 3-6
3.30 3.40pm	**PRIZE DRAW**	

MATHEMATICS TEACHING AND LEARNING CENTRE PRESENTS

Celebrating STEM Education
Ignite, Innovate, Inspire

STEM teacher and leader conference
Friday 20 June 2025

Australian Catholic University
25A Barker Road
Strathfield NSW 2135
(ABN 15 050 192 660)

REGISTRATION PROCESS

STEP 1: REGISTER AND PAY

Secure your registration by making payment. Please use one of the payment methods listed. Attendance is confirmed once payment is received.

Registration schedule: 30 May 2025 – Conference registration closes

Be sure to register before the closing date.

STEP 2: CONFIRMATION

You will receive **confirmation** of your registration by email in early June. If you have any queries about your registration please **email mtlc@acu.edu.au**.

Please do not attend the conference unless you have received registration confirmation from the MTLC.

Refer to **acu.edu.au/mathsconference** for updated information.

Email **mtlc@acu.edu.au** with any queries.

REGISTRATION CLOSES ON 30 MAY 2025

PAYMENT METHOD

CREDIT CARD (PREFERRED METHOD)

Pay online at: **acu.edu.au/mathsconference** (Booking confirmed on payment).

REQUEST INVOICE

Email **MTLC@acu.edu.au** and request an invoice. Please pay promptly on receipt of your invoice to secure your place.

"Great topics and speakers. Very practical information and hands on activities relevant to the classroom. More opportunities like this please!"

"Well organised day. Keynote was a good introduction, and all sessions were interesting and well-paced. Presenters were knowledgeable and understood exactly what teachers need."

Comments from previous participants of MTLC professional development events