



THE UNIVERSITY OF
SYDNEY

2022 edition

Science Alliance

Programs and events



2021 was a busy year for the Science Alliance team, with constant changes in the second year of the pandemic keeping us on our toes.

We are cautiously optimistic that we can provide a good mix of formats this year and look forward to seeing more people on campus. You will find that our “old favourites” are still on the menu for 2022 and that many programs are now available online, so we can continue to reach a wider audience.

We hope that this year brings opportunities to welcome you back to in-person programs, however, with the option of attending our virtual events you can continue to engage with quality STEM content and educational resources.

Our in-person activities will be subject to Public Health restrictions, and we will continue to keep you informed of our upcoming events through our Science Alliance emails and on our website.

We send you our best wishes 2022 and welcome you to one of our events soon.

Science Alliance Team



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What is Science Alliance?



Science Alliance brings science at the University of Sydney out of the lab and into your world.

With programs ranging from public lectures and HSC workshops, to teacher seminars and holiday camps, we aim to make science exciting and accessible.

Read on to find out how you can get involved in 2022.

For the latest news from Science Alliance, join us online at:

- Facebook: [sydneyscience](#)
- Twitter: [@sydney_science](#)
- sydney.edu.au/science/outreach

School Programs

Essential Medicines

Virtual

*Suitable for Year 9-10,
Open to schools and individual students*

Join the Breaking Good Initiative and contribute to the citizen science project. Spend a day with our researchers learning about medicines, how they are discovered, which ones are the most important to keep the world healthy and why some people have access to the medicines that they need but others do not.

Grand Challenge program

Virtual

*Suitable for Year 9-10,
Open to schools and individual students*

Collaborate with leading researchers and award winning entrepreneurs to learn about a real-life global problem i.e. brainstorm, create a prototype and pitch their own solutions to their peers and STEM experts for a chance to win cash prizes.

Infinite Pathways

Virtual

*Suitable for Year 9-10,
Open to schools*

Hear from top, current mathematicians working in the School of Mathematics and Statistics about how they got to where they are today and their hottest research work. Get digital goodie bag or STEM career pathways and participate in our online interactive activities and puzzles.

Mega Maths Day

*Suitable for Year 9-10,
Open to schools*

Year 10 is a key time when your students are choosing their future direction. Your students will be inspired by how maths studies will open doors in their future in the program full of workshops showcasing the importance of maths in a variety of real-world STEM applications.

Unearthing Science

In school

*Suitable for Year 9-10,
Open to rural and regional NSW schools*

Energise the budding scientist with this all-materials-included teaching package. Your students will be tasked with designing their own science investigation, collecting data from their own local environment or community, and presenting their work to their peers in a variety of communication pathways.





Tea Composition

*Suitable for Year 5-12 (Stage 3-6),
Open to schools around Australia*

Participate in this real-world research project that evaluates the decomposition process in relation to local soil properties. Engage in practical activities, including field tests, laboratory-style experiments, classroom analyses and digital reporting.

Meet a Mathematician

*Suitable for Year 9-10,
Open to schools*

Have a mathematics researcher take over your classroom for one hour. Your students will be introduced to the role of mathematics in careers, including a shallow dive into a current field of research and hands-on puzzles designed by the visitor themselves. Ask anything from ATAR tips to HSC maths subjects and university life.

In school

Spectacular Science

*Suitable for Year 7-11,
Open to schools*

Take a journey into the fascinating world of science, with a day trip to Spectacular Science.

Meet a real scientist, as they outline a day in the life of a science researcher, then jump into a laboratory or workshop to experience a dose of the science disciplines of your choice. Finally, finish the day off with smoke and sparks with our Science Show!

Virtual

Sydney Santos Science Experience Forensic Investigations!

Open to individual students in Year 9 & 10

Become a detective for three days in forensic science labs and workshops to solve an unusual crime. Spend your school holidays solving hands-on problems with fellow budding scientists and talking to real forensic STEM experts.

Sleek Geeks Science Eureka Prize

Open to Primary and Secondary school students nationally **Competition**

Win a share of \$10,000!

If you have a passion for science and for communicating ideas, then enter this competition.

Communicate a scientific concept(s) in a way that is accessible and entertaining to the public, while painlessly increasing their science knowledge – or, as the Sleek Geeks like to say, “learn without noticing”.

International Science School 2022

Suitable for Year 11-12, Open to individual students, applications open in Term 1, 2022 **Virtual**

The Professor Harry Messel International Science School (ISS) is a fully funded 9-day online program bringing together top science students in Year 11 and 12 from different states of Australia and around the world. It is featuring inspiring talks by leading scientists, virtual visits to cutting-edge research labs, and amazing activities.

Project Management Spring Camp

Designed for students in Years 10, 11 and 12, our intensive workshop, held in September, will give students a head start in project management and show where this dynamic field can take them.

Mathematical Problem Solving Correspondence Program

*Suitable for Year 8-10
Open to Teachers' nominations*

In this three-term-long program, participants will work on challenging mathematical problems and receive feedback from their mentor for each question. In Term 4, students will have an opportunity to present their group research findings at the Mathematical Talk Showcase.

Mathematical Enrichment, the Mathematical Olympiad and the Tournament of Towns

The Australian Mathematical Olympiad Committee (AMOC) offers a variety of activities ranging from training programs to mentorships run with the assistance of academic mathematicians throughout Australia.

These programs, which are presented in a carefully sequenced arrangement of enrichment activities, offer valuable tuition and resources to students. The most gifted students may be selected for more specialised training directed towards the Mathematical Olympiad and the Tournament of Towns.

In addition, AMOC offers the **Australian Intermediate Mathematical Olympiad (AIMO)** which is open to all students in Years 8 - 10, where they can test their Mathematical skills and talent.

HSC Preparation

Virtual Kickstart and Kickstart

Workshops are offered in:

- biology
- chemistry
- physics.

Virtual Kickstart HSC Workshops Virtual

*Suitable for HSC students,
Open to schools*

Virtual Kickstart workshops give HSC students a chance to learn key ideas, see demonstrations and perform their own analysis in the syllabus that can be attended from home or at school.

Kickstart HSC Workshops

*Suitable for HSC students,
Open to schools*

Kickstart workshops give HSC students a chance to do experiments and demonstrations of key ideas in the syllabus that are difficult to do in the classroom.

Kickstart on the Road

*Suitable for HSC students,
Open to schools*

Kickstart on the Road takes our science HSC workshops on regional trips between March and June. In 2022, we will be taking biology, chemistry and physics workshops on the road to regional area of NSW.

Science Extension Workshops Distance

*Suitable for HSC students,
Open to schools*

Spend a day learning about the HSC science extension course exploring best scientific practice, experimental design, research techniques and reviewing statistical analysis of data. The workshops focus on the concept of the scientific process, how to begin designing a scientific investigation, and mathematical tools for analysing data.

Science Extension Mentoring Program

*Suitable for HSC students,
Open to individual students*

The Science Extension Mentoring Program provides one-on-one support to students from trained PhD student mentors throughout their whole science research project. Each student is linked with a suitable mentor, who can then offer personalized suggestions and tips.

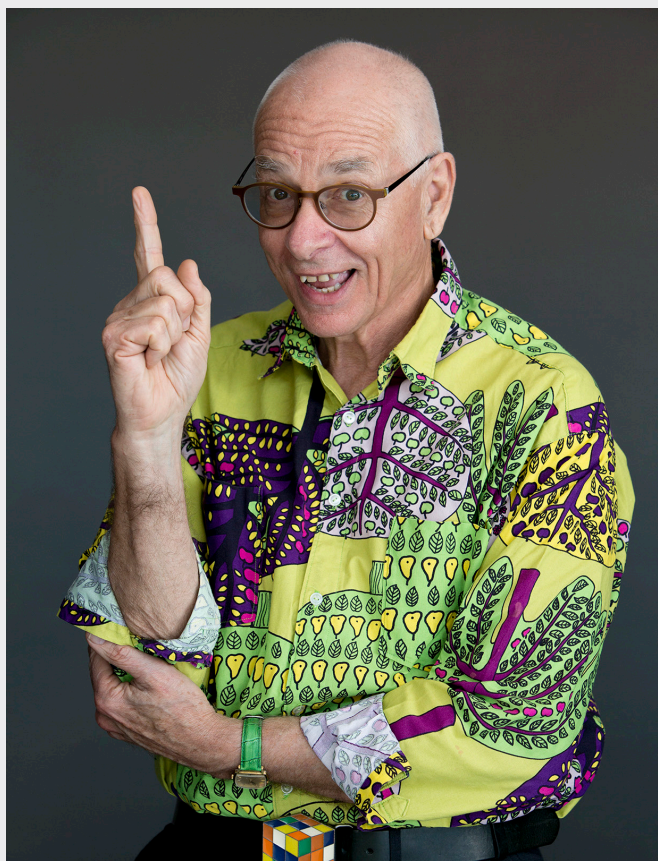
Science Extension Data Analysis Workshops Virtual

*Suitable for HSC students,
Open to schools and individual students*

Learn about data analysis for your Science Extension project. Talk about your project with an expert in a small group setting to learn what tools and techniques will work best for you.

Dr Karl Kruszelnicki

Dr Karl Kruszelnicki, author and Triple J science presenter, the winner of the 2019 UNESCO Kalinga Prize for the Popularisation of Science, is also the Julius Sumner Miller Fellow in the School of Physics at the University of Sydney. Why not catch a free Dr Karl Great Moments in Science™ talk during your next University of Sydney visit? Or, if you can't get to the University, speak with Karl in one of his several free weekly School Science Q&A sessions - anywhere in Australia and the rest of the planet. Book one at drkarl.com.



You can also join Dr Karl and special guests for weird facts and amazing conversation in his latest podcast Shirtloads of Science:

- bit.ly/shirtloads-apple
- bit.ly/shirtloads-android

Teacher Resources



Science Extension Program

The program includes on-campus workshops, an online mentor program and online learning resources designed to support both teachers and students participating in the Science Extension HSC course.

– sydney.edu.au/science/industry-and-community/community-engagement/science-extension-workshop.html

STEM Teacher Enrichment Academy

Established in 2014, the Academy has an alumnus of 800 high school teachers from 139 schools and 370 primary school teachers from 90 schools. The year-long programs offer knowledge, skills, resources and support to enable teachers to make a real change in their classroom teaching of science, technology, engineering and mathematics (STEM) subjects.

The academy programs, facilitated by the University's leading academic specialists, aims to provide schools with the opportunity to design and implement STEM projects suited to their own context, as well as evaluate their teaching and student learning.

– sydney.edu.au/stem/academy

Australian Citizen Science Association (ACSA)

Citizen science involves public participation and collaboration in scientific research with the aim to increase scientific knowledge. It's a great way to harness community skills and passion to fuel the capacity of science to answer our questions about the world and how it works. To be involved in citizen science you don't need a science degree. Citizen scientists work with scientists or within the scientific framework to achieve scientific goals.

ACSA was formed in June 2014 to advance citizen science through the sharing of knowledge, collaboration, capacity building and advocacy. The University of Sydney is excited to be the host institution for Citizen Science. We encourage you to visit ACSA's website to learn more about what they do, sign up to their newsletter, and explore citizen science projects via the project finder. We look forward to working with them to advance citizen science in Australia.

- citizenscience.org.au/



Museums

Chau Chak Wing Museum

The University of Sydney's new museum of art, science, history and ancient cultures is now open to public. Featuring 18 exhibitions across four floors of galleries, engaging public events and hands-on learning programs for students.

From ancient Rome, Greece and Egypt, to the art of First Nations people, and the works of leading contemporary artists, the Chau Chak Wing Museum is open to all as a centre of cultural and artistic excellence.

– sydney.edu.au/museum





Anatomy in the J.L. Shellshear Museum

The J.L. Shellshear Museum is the only museum dedicated to physical anthropology in Australia and holds collections of human skeletons, other primate skeletons, vertebrate skeletons and casts for the study of human evolution. The museum is open to small school groups, in addition to functioning as a teaching collection and research collections. Workshops provide students with an opportunity to observe the structure of human skeletons and compare them with those of primates, our human ancestors and other non-human animals (e.g. sheep, kangaroos) through handling bones and casts.

- sydney.edu.au/medicine-health/schools/school-of-medical-sciences/discipline-of-anatomy-and-histology/jl-shellshear-museum.html

The Ainsworth Interactive Collection of Medical Pathology (Pathology Museum)

Public access subject to public health restrictions

The Ainsworth Interactive Collection of Medical Pathology is situated on the ground floor of the Charles Perkins Centre on the Camperdown Campus. It houses more than 1300 pathological specimens on permanent display.

The collection originated in the Anderson Stuart Building in 1889 and was called the "Museum of Normal and Morbid Anatomy". The collection has a very long history within the University of Sydney and has grown over many years. Scientific instruments and equipment of historical interest were added to the collection in August 1986 by the Dean of the Faculty of Medicine, Professor RS Gye.

- sydney.edu.au/medicine-health/schools/school-of-medical-sciences/discipline-of-pathology/pathology-museum.html

Public Events



Lunchbox Science

Virtual

Join our scientists for a lunchtime session where they'll go in depth on a range of science topics and give you the chance to have your questions answered.

More information to come in 2022. Visit our website to watch our past webinar recordings.

– sydney.edu.au/science/news-and-events/events/lunchbox-science

Sydney Ideas

Sydney Ideas is the University of Sydney's flagship public talks program. Sydney Ideas believe in the value of ideas that make a difference and have been bringing leading thinkers from around the world to Sydney since 2006.

– sydney.edu.au/sydney-ideas

Sydney Science Forum

Sydney Science Forum lectures give you an opportunity to hear about the latest research, ideas and innovations from our brightest scientific minds. After various talks, we also feature hands-on activities and demonstrations where you can experience science in a way that's informative and fun.

Visit our website to stay up-to-date on public events in 2022.

– sydney.edu.au/science/news-and-events/events/sydney-science-forum.html

Sydney Science Festival

The University of Sydney celebrates National Science Week in August. For a full range of public events and programs, please visit our website and get involved!

– sydney.edu.au/science/news-and-events/events.html

Stay connected

We hope you will join us for one or many of our exciting and educational events or programs in 2022.

Keep up-to-date with the University of Sydney Science Alliance
sydney.edu.au/science/outreach
science.alliance@sydney.edu.au

Facebook: [sydneyscience](https://www.facebook.com/sydneyscience)

Twitter: [@sydney_science](https://twitter.com/sydney_science)

Instagram: [@sydney_science](https://www.instagram.com/sydney_science)

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