

PROGRAM GUIDE

2027



BALLARAT
TECH
SCHOOL

Our vision is to inspire young people to connect to their future through curiosity, discovery and innovation in STEM.

Our mission is to bring education, industry and community together in an immersive environment, driven by hands-on STEM exploration. We use design thinking and future skills to transform learning, challenging students to solve real world problems and preparing them for the future of work.

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SCIENCE :
SEEK THE ANSWER



TECHNOLOGY :
EMBRACE THE NEW



ENGINEERING :
SOLVE THE PROBLEM



MATHEMATICS :
UNDERSTAND THE WORLD



About Us

Ballarat Tech School is designed to engage, inspire and prepare students for lifelong learning in a changing, highly STEM focused world.

Through partnerships and collaboration, our programs equip students with transferable STEM skills, and build capability and confidence in teachers, linking both to emerging and future industry pathways.

With support and funding from the Department of Education and Federation University, we provide curriculum linked, local industry focused learning programs at **no cost** to partner secondary schools in the region.

Our dedicated staff are a mix of education and industry professionals who share a genuine passion for STEM, collaborating with teachers and industry to co-design and deliver programs that bring classroom learning and the future world of work closer together.

Our state of the art facilities are also available for use by community groups and industry. Inquiries and new partnership opportunities that align with our strategic objectives are welcome.

Damon Minotti, Associate Director

BOOKING PROGRAMS:

All Tech School programs are **FREE**. For local partner schools, bus transportation to and from the Tech School is also provided **FREE**.

- 1 Released with this Program Guide is an Expression of Interest form for 2027.
- 2 Scan the QR Code below for access and instructions. You can book single or multiple programs.
- 3 We will contact you to discuss and confirm your booking or options if required.
- 4 Once your booking(s) is confirmed, you will be emailed program details and bus times.
- 5 Complete the student attendance form and return it prior to your visit.

Some programs can be delivered by our staff at your school (see Tech School at Your School section) and regional and rural non-partner schools can inquire about program options.



For more information scan the QR code.

Program Offerings

Our 2027 program guide is structured to reflect the complexity of programs and their suitability to different stages of learning. It also showcases other specialist STEM learning opportunities that are available to both students and teachers outside normal program delivery.



GO WIDE

These programs are designed to cover a broad range of curricula and student capabilities, inspiring curiosity in STEM skills and emerging technologies for all students. Go Wide programs are suitable for whole year level bookings, providing an accessible offering to every partner school student at least once a year, every year, from years 7-9.



GO DEEP

These programs and opportunities offer skill extensions and pathways for engaged students. They have a targeted future focus, introduce real world challenges and are best suited to elective style classes that can embed the learning at school. Specialist opt in opportunities are designed for students to attend independently and who want to learn more through repeat visits and industry exposure.



GO CAREER (VCE & VCE VM)

These programs have a post schooling pathways focus that targets VCE, VCE VM & VET requirements for further study and/ or work readiness.

They utilise our resources to improve student assessment and link to local and future industry and further education pathways and opportunities.



TEACHER PROFESSIONAL LEARNING

Free and available for teachers across a variety of content, pedagogy and technology areas, professional learning sessions will be regularly available each term and promoted through our eNews. Sessions can also be undertaken within onsite core program delivery and teachers are encouraged to reach out to co-design experiences that address specific skill or knowledge needs.



TECH SCHOOL AT YOUR SCHOOL

We understand that attending the Tech School is not always possible for a variety of reasons, so we have designed a range of options that can bring some of the Tech School programs, equipment and expertise to your school instead. These programs are designed for regional non-partner schools but can also be accessed by partner schools where appropriate.

Each program page has specific information listed at the top along with a general description, expected student outcomes, curriculum and capabilities foci, STEM / Tech related knowledge and skill points, and program pathways. Year levels listed are recommendations based on content, but can be negotiated by contacting us to discuss.

Each program has a QR code linking to a webpage with more detailed information. We are also available by phone and email to discuss how our programs can best supplement your teaching and learning.

We encourage teachers to consider their choice of program(s) and learning opportunities, not only in the context of their own classroom curriculum, but also what may be possible for themselves and their students in the future with well developed STEM related skills.

Our Programs

PROGRAM	DURATION	MAX STUDENTS	PAGE
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STEM Island (Year 8 Cohort)	1 Day	75	12-13
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 GO DEEP PROGRAMS			
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 GO DEEP SPECIAL OPPORTUNITIES			
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Augmented Consciousness (Psychology)	2 Hours	26	52-53
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*Most Tech School programs can be tailored to Applied Learning requirements including VCE Vocational Major.



GO WIDE PROGRAMS

These programs are designed to cover a broad range of curricula and student capabilities, inspiring curiosity in STEM skills and emerging technologies for all students.

Go Wide programs are suitable for whole year level bookings, providing an accessible offering to every partner school student at least once a year, every year, from years 7 - 9.

From these experiences, students may identify one or more "Go Deep" skill enhancing programs that they can opt into to build on their knowledge and interest in STEM.



STEM in Action



1 Day



Up to 75 Students



Year 7

Students explore a variety of STEM concepts and activities as they move through three, one hour rotations. The day is framed by a contextual discussion of STEM skills, their importance to our future, and a demonstration of emerging technology.

This program is a perfect introduction to the programs, facilities and teaching style of the Ballarat Tech School. With short sessions and great variety, this crowd pleaser will engage your whole Year 7 cohort and open their eyes to future learning opportunities.

Session rotations include, but are not limited to, Virtual Reality experiences; programming VEX robots to automate simple tasks; using STEM skills to solve an escape room; exploring AI to support and innovate digital storytelling through Podcasting.

Students will:

- Become familiar with the Tech School spaces and teaching styles
- Develop an awareness of STEM concepts and their importance for future pathways
- Explore different technologies and STEM related skills

Curriculum Focus & Capabilities:

- | | |
|---------------------|--------------------------------|
| • Science | • Critical & Creative Thinking |
| • Design Technology | • Personal & Social |
| • Humanities | • Ethical |
| • Mathematics | • Digital Literacy |

Technical & Personal Skills:

Virtual reality, robotics, computer science, software systems, coding, scientific inquiry, problem solving, collaboration, communication



VR was an amazing new experience and super fun! The Escape Room was also very interesting.



POSSIBLE PATHWAYS

STEM IN ACTION

STEM Island

STEM Showdown



For more information scan the QR code.

STEM Island

 1 Day  Up to 75 Students  Year 8

Students arrive at the Tech School, only to hear about a baffling mystery that has the local community stumped. Although the scenario is fictitious, students will need to learn and apply real-life skills in cybersecurity (including AI), virtual reality (VR) and forensics to help them solve this “whodunit” mystery.

Armed only with limited knowledge of the case, students break into groups to complete three rotations of activities based on cybersecurity, virtual reality and forensics. They will need to think creatively like perpetrators and critically like detectives to examine evidence, find clues and try to piece together how it all happened.

In their teams, they will need to try and put together a watertight case to present to the Chief Inspector before their time runs out!

Students will:

- Improve their knowledge of cybersecurity with meaningful use of AI
- Be immersed in VR to problem solve and find clues
- Develop an understanding of how forensics uses scientific reasoning

Curriculum Focus & Capabilities:

- | | |
|--------------------------------|---------------------|
| • Technologies | • Personal & Social |
| • Mathematics | • Ethical |
| • Science | • Digital Literacy |
| • Critical & Creative Thinking | |

Technical & Personal Skills:

Scientific inquiry, computer science, collaboration, problem solving, virtual reality, communication, cybersecurity and artificial intelligence



“I loved how it was very fun while we also got to learn. The adventure story that we were taken on was unreal and very exciting.”


POSSIBLE PATHWAYS

STEM in Action

STEM ISLAND

STEM Showdown



For more information scan the QR code.



For more information scan the QR code.



GO WIDE PROGRAM

STEM Showdown



1 Day



Up to 50 Students



Year 9

STEM Showdown turns your Year 9 cohort into dynamic teams to face off in a variety of quick paced challenges that engage them in hands-on activities to showcase the real world power of Science, Technology, Engineering and Mathematics knowledge and skills.

Make a day of it as this fun filled and rapid fire program rolls out challenges where success relies on the application of the 4 Cs of 21st-century learning: Critical Thinking, Creativity, Collaboration and Communication.

Students participate in friendly competition and real-time scoring while applying STEM skills in practical contexts.

Students will:

- Collaborate in small teams
- Communicate to achieve a common goal
- Demonstrate critical and creative thinking
- Apply STEM knowledge and skills to problem solve

Curriculum Focus & Capabilities:

- Science
- Technologies
- Mathematics
- Critical & Creative Thinking
- Personal & Social
- Digital Literacy

Technical & Personal Skills:

Computer science, scientific inquiry, software systems, Engineering & Mathematics principles, problem solving, collaboration, communication



“I enjoyed the challenges. It was fun and helped me communicate better with my team, I want to do it again!”



POSSIBLE PATHWAYS

STEM Island

STEM
SHOWDOWN

Go Deep (Programs)



GO DEEP



GO DEEP PROGRAMS

These programs and opportunities offer skill extensions and pathways for engaged students.

They have a targeted future focus, introduce real world challenges and are best suited to elective style classes that can embed the learning at school. Go Deep programs have the most scope to be adapted to your classroom structure and can be supported with pre- and post-visit resources.

While these programs are up to one day in duration, there may be opportunities for students who wish to extend their knowledge and skills to opt in and return to the Tech School for specialist days, or access our online courses to undertake more complex learning.

Science Unpacked



 **2 Hours**  **Up to 26 Students**  **Years 7-10**

Science Unpacked offers students a deceptively simple scientific investigation while prompting them to critically evaluate variables, methods, evidence, limitations and improvements, building their science inquiry skills.

This program can be used as an introduction or a deep dive into the scientific investigation process to prepare students for their own investigation project or entry into the Peter Doherty Science Award (see pages 34-35).

For more information about each experiment please scan the QR code to visit the Tech School website. This may also include future updates and new modules.

- Students will:**
- Implement steps of the scientific method to conduct an investigation
 - Reflect on how ‘good’ experiments are conducted
 - Discuss limitations and improvements of the investigations
 - Apply scientific skills to real world scenarios

- Curriculum Focus & Capabilities:**
- | | |
|-------------------------|--------------------------------|
| • Science Understanding | • Critical & Creative Thinking |
| • Science Inquiry | • Ethical |
| • Mathematics | |

Technical & Personal Skills:
The scientific method, scientific inquiry, key science skills, problem solving, communication and collaboration



Program Variation:
This program can be delivered onsite or as a Tech School at Your School experience. Program duration is negotiable.

Program Offerings

There are three investigations to choose from, increasing in complexity. In experiment 1, the classic concept of juicing oranges aligns with band 7-8 biological sciences and guides students to understand what elements can make a ‘good’ experiment.

Two new structured and open inquiry investigations relating to Levels 7-10 chemical and physical sciences are being developed to extend students’ understanding and application of the scientific method.

EXPERIMENT 1: GUIDED INQUIRY

This experiment introduces scientific questions and the scientific method through a familiar, well-scaffolded process, focusing on variables, fair testing and what makes an investigation scientific.



EXPERIMENT 2: STRUCTURED INQUIRY

Structured Inquiry begins with a more open-ended activity that leads students to identify patterns and work through several stages of an investigation with some guidance but less scaffolding from the teacher.



EXPERIMENT 3: OPEN INQUIRY

With materials and support, students design and conduct their own investigation, developing questions, selecting methods and analysing results. This open-ended approach strengthens the scientific thinking and practical skills required for VCE Chemistry, Physics and trade-related pathways.



Partner School Led Extension

This option enables students and teachers to extend their stay into a full day, making use of the Tech School’s facilities and tools with support from Tech School staff to work on their own investigations.



For more information scan the QR code.

Prototyping Projects



 **Flexible**  **Up to 26 Students**  **Years 7-12**

Rapid prototyping is a critical innovation skill in many of today's industries where businesses need to adapt quickly to design or improve products. This format enables students to develop and refine their skills and understanding of the prototyping process using technologies.

This program is designed to operate under a 'module' structure, whereby the Tech School will work with teachers to co-develop a learning experience that is tailored to students, based on the work being undertaken at school.

The day will begin with a "Learn module" where Tech School staff will teach students the skills they will need for the day. There is then the option to continue with a Tech School project module or schools can choose to work on their own prototypes which can be integrated with their classroom learning.

Students will:

- Implement Design Thinking
- Enhance their problem solving skills
- Improve their knowledge of the prototyping process

Curriculum Focus & Capabilities:

- | | |
|--------------------|--------------------------------|
| • Technologies | • Science |
| • Humanities | • Mathematics |
| • Digital Literacy | • Critical & Creative Thinking |

Technical & Personal Skills:

Prototyping, design, computer skills, hardware and software systems, problem solving, collaboration



Program Variation:

Available modules include: Laser Cutting Tutorial, 3D Printing Tutorial (TinkerCAD), 3D Printing Tutorial (Fusion 360), Partner School Project, Vacuum Form Mould Making. For more information about each module scan the QR code to visit our website. This may also include future updates and new modules.

Program Structure

Once you've made your module selections from below, contact us to discuss your preferred module content, explore your options and arrange suitable dates for your visit.

Start by choosing your preferred technology, either Laser Cutting or 3D Printing, and then the appropriate Learn Module.

Learn Modules

The day begins with a "Learn module" where Tech School staff will teach students and accompanying teachers the necessary skills they will need for their chosen technology (Laser Cutting or 3D Printing). Schools can then choose either the existing '**Tech School Project Module**' or the '**Partner School Project Module**', allowing students to work on prototypes that integrate with their classroom learning.

Partner School Project Modules

This module enables schools to utilise Tech School resources to prototype their specific classroom projects. This helps to create a more integrated learning experience and often provides students with a greater purpose to learn throughout the day.

Tech School Project Modules

Designed to consolidate the 'Learn' module skills, schools can select from a number of existing general project concepts already developed by the Tech School.



POSSIBLE PATHWAYS

STEM
in Action

**PROTOTYPING
PROJECTS**

Girls/Boys
in STEM



For more
information
scan the
QR code.



For more information scan the QR code.



GO DEEP PROGRAM

Machine Learning in Automation



1 Day



Up to 26 Students



Years 8-10

The process of automation has changed how we do business in today's world and machine learning is further reshaping the skills and jobs that will be required into the future.

In this redeveloped two-part program, students work in small groups to assemble, wire and program an M&M sorting machine. Students will train a machine learning model to detect colours using computer vision and sort items accordingly. The class is structured to allow self-paced learning and acknowledges that not everyone has the same prior experience with electronics and coding.

In the afternoon, students work in teams to automate production in a virtual factory. This session involves gamified learning using the program 'Factorio', applying collaboration and problem solving skills to negotiate a balance between several competing production demands to generate the most income for their factory.

Students will:

- Learn to program motors and sensors
- Build, test and improve a simple automated machine
- Train a machine learning model

Curriculum Focus & Capabilities:

- Science
- Digital Technologies
- Mathematics
- Critical & Creative Thinking
- Ethical
- Digital Literacy

Technical & Personal Skills:

Computer science, hardware & software systems, coding, problem solving, collaboration, communication, systems thinking, Artificial Intelligence



This program is really fun and is really good for learning about electrical and automated things! I liked playing Factorio.



POSSIBLE PATHWAYS

STEM in Action

**MACHINE LEARNING
IN AUTOMATION**

Game of Drones

Bushfood AI Innovations

 1 Day  Up to 24 Students  Years 9-10

The contemporary use of Australian bushfood flavours has enabled unique product development and innovation in the local food industry in recent years.

This program merges the new with the old as AI technologies are leveraged to help students create products that lean into Australia's distinctive culinary heritage.

The exploration of Australian native ingredients and exotic essences (think lemon myrtle, pepperberry, wattleseed) combined with the use of AI platforms and modern cooking techniques allows students to display their full creative and collaborative skills as they produce their very own product in this variation of one of our most enduring and popular programs.

Students will:

- Utilise AI in the product development process
- Work in teams to design and create
- Experiment with senses and flavours
- Design and iterate through prototyping
- Taste and showcase their own unique products

Curriculum Focus & Capabilities:

- Science
- Design & Technologies
- Digital Technologies
- Critical & Creative Thinking
- Digital Literacy
- Intercultural & Cultural
- Personal & Social

Technical & Personal Skills:

Prototyping, design, software systems, collaboration, communication, Artificial Intelligence

POSSIBLE PATHWAYS

STEM in Action

BUSHFOOD AI INNOVATIONS

Prototyping Projects



We all enjoyed the experience very much. Trying new exotic Bushfood flavours and making our own bushfood brownie was so cool.



For more information scan the QR code.



Robot Missions



1 Day



Up to 24 Students



Years 9-11

Search and retrieval operations are one of the many industry applications for ground and aerial robotics. Similar processes are used in different environments, from commercial warehouse stocking and delivery packing, to search and rescue in hazardous terrain.

In this one day program, students work in pairs to assemble their VEX IQ robot and explore sensors to replicate a known real world example (e.g. robotic vacuum). As the day develops, drones and flight are introduced, as well as more complex coding options, so students can devise and execute their own search and retrieval mission.

In the last session, students design a custom built add-on for their VEX and hone their drone flying and coding skills before showcasing their mission attempt.

Students will:

- Construct and code a basic VEX IQ robot
- Add lights and sensors to improve its capability
- Experiment with different technologies and software
- Engage in basic drone flying and coding
- Design and execute a search and retrieval mission

Curriculum Focus & Capabilities:

- | | |
|-------------------------|--------------------------------|
| • Design & Technologies | • Critical & Creative Thinking |
| • Digital Technologies | • Personal & Social |
| • Mathematics | • Digital Literacy |

Technical & Personal Skills:

Robotics, coding, computer science, hardware and software systems, prototyping, problem solving, collaboration, communication, systems thinking



Program Variation:

This program can be delivered onsite as part of the Tech School at Your School offerings. A large indoor space with power is required to charge and fly the Neo Drones safely.



POSSIBLE PATHWAYS

STEM Showdown

ROBOT MISSIONS

Game of Drones



For more information scan the QR code.



PC Builder

 1 Day  Up to 26 Students  Years 9-11

The personal computer is perhaps the most common and essential tool of almost any home or workplace in today’s society. We design, communicate and play on them daily, but how many of us actually understand how they work? Could your house, classroom or business survive without one?

In this program students learn about the different components of a computer, the function of each component and why each is needed to run certain programs, by building a PC at their own pace. Beginning with a seemingly random set of computer parts, students will step through the process of assembling their PC, from component identification and assembly order to cable management and troubleshooting.

After installing an operating system and running the PC to check the success of their build, the final part of the day involves students disassembling their PC. By returning it to its basic state of components, they can revisit critical learning and discuss how they might upgrade parts to improve performance.

Students will:

- Learn about computer hardware and software
- Practise assembling and disassembling a desktop computer
- Learn to troubleshoot PC builds and common mistakes

Curriculum Focus & Capabilities:

- | | |
|------------------------|--------------------------------|
| • Digital Technologies | • Critical & Creative Thinking |
| • Mathematics | • Digital Literacy |

Technical & Personal Skills:

Computer science, hardware and software systems, problem solving, collaboration, systems thinking

 POSSIBLE PATHWAYS

STEM Island

PC BUILDER

Cyber City



Program Variation:

This program can be delivered onsite at the Tech School or we can bring a limited number of PCs out as a Tech School at Your School offering once we have confirmed essential requirements.



For more information scan the QR code.



Cyber City



1 Day



Up to 28 Students



Years 9-10, VCE

This program's centrepiece is a scaled, connected and functional representation of a smart city, built out of LEGO with critical infrastructure and recognisable local Ballarat landmarks.

Cyber City is run by students on a real time cybersecurity network that protects its functions, including renewable energy generation and storage to power lights, buildings, trains and more. With the capacity to attack or defend the city in groups, students will develop an understanding of networks, the critical role of software updates and the "good and bad" human factors in IT systems.

This hands on and interactive program uses industry leading gamification and "live fire" simulation techniques to introduce the importance of future energy networks and the online security that protects them.

Students will:

- Be introduced to different clean energy sources and future energy storage options
- Learn the fundamentals of cybersecurity threats and protection techniques
- Build technical, operational and collaborative competencies in cybersecurity and energy system knowledge
- Develop communication and teamwork skills required in professional environments

Curriculum Focus & Capabilities:

- Digital Literacy
- Technologies
- Science
- Critical & Creative Thinking
- Ethical
- Personal & Social
- Sustainability

Technical & Personal Skills:

Cybersecurity, computer science, coding, problem solving, communication, collaboration, systems thinking



POSSIBLE PATHWAYS

STEM Island

PC Builder

CYBER CITY



Program Details:

This program aligns with the Victorian Government and Committee for Ballarat's strategic direction on Clean and Renewable Energy skills and knowledge.



For more information scan the QR code.



GO DEEP SPECIAL OPPORTUNITIES

These programs and opportunities offer skill and knowledge extensions and pathways for engaged students on set dates, and at set times in different formats.

Specialist opt in opportunities are designed for students who want to learn more through regular and repeat visits and industry exposure. Registration for these events can be coordinated through schools or completed individually by students.

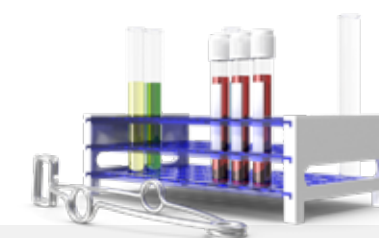


For more information scan the QR code.



GO DEEP SPECIAL OPPORTUNITIES

Peter Doherty Science Award



Timing Negotiable



Unlimited Students



Years 7-10

The Peter Doherty Science Award was established in 2009 as a joint initiative of the Committee for Ballarat and Australian Nobel Prize laureate Professor Peter Doherty.

Open to students in Year 7 to Year 10 in Ballarat and regional western Victoria, the annual award encourages:

- Scientific thought and activity, inspiring students to investigate everyday issues by undertaking experimental research using the scientific method.
- Scientific communication, requiring students to present their findings in scientific poster format and for finalists, at an in person presentation event.

The Award offers three prizes with a combined value of more than \$2,000 and is structured to enable students to participate as part of their school curriculum or enter independently with their peers.

Help prepare your students for success by booking Science Unpacked (see pages 18-19) to provide inspiration for investigations and further refine their scientific inquiry skills.

Students will:

- Demonstrate the application of the scientific method
- Develop written and verbal communication skills
- Enhance their Science Inquiry skills

Curriculum Focus & Capabilities:

- | | |
|---------------|--------------------------------|
| • Science | • English |
| • Humanities | • Critical & Creative Thinking |
| • Mathematics | • Ethical |

Technical & Personal Skills:

Scientific inquiry, prototyping, design, problem solving, collaboration, communication



Supported by:



Boys in STEM

 **8 Days**  **Up to 60 Students**  **Years 8-9**

The Boys in STEM program is focused on providing young men with a similar opportunity to our highly successful and well established Girls in STEM program. Running for two days per term throughout the year, it will enable students to explore the world of STEM through hands on activities and connections with local industries.

Students will engage in a series of real world design and creative challenges, building connections and confidence within a supportive environment that provides the chance to meet and work with like-minded peers and STEM professionals. The program will:

- Engage with STEM industries, including site visits
- Develop STEM skills with industry
- Discover pathways in study and careers
- Build a collaborative network of peers and mentors

The deep learning pathways mapped, and the networks made across schools over 8 days is supported by local industry professionals and mentors. Schools can nominate boys and gender diverse students with an interest in STEM based subjects who would benefit from integrated hands-on learning and building connections with students from other schools.

Students will:

- Discover local industries
- Enhance interpersonal skills with different peers
- Exercise judgement & critical thinking in varied situations
- Learn about, and with, advanced technologies
- Refine their communication skills

Curriculum Focus & Capabilities:

- | | |
|----------------|--------------------------------|
| • Science | • Arts & Humanities |
| • Technologies | • Business & Economics |
| • Engineering | • Critical & Creative Thinking |
| • Mathematics | • Personal & Social |

Technical & Personal Skills:

Each term will have a different technology and skills focus while developing personal capabilities



I love getting to focus on STEM topics for full days and giving it my all with people from other schools.



For more information scan the QR code.



For more information scan the QR code.



GO DEEP SPECIAL OPPORTUNITIES

Girls in STEM



8 Days

Up to 60 Students

Years 8-9

The Girls in STEM program is centred on “you can’t be what you can’t see” and provides young women with access to mentors, experiences and skill development in a focused and supported environment for two days per term across the year.

Utilising the Design Thinking model, the program is linked to local industry and presents students with opportunities to engage with:

- STEM related industries (site visits)
- Skill development with industry
- Real world problem solving
- Study and career pathways
- Networking and connections

The deep learning, career pathways mapped and the networks made across schools over the 8 days are supported by industry professionals and mentors. Schools can nominate girls and gender diverse students in Years 8 & 9 with an interest in STEM based subjects who would benefit from deeper learning and engagement with like minded students from other schools, exploring STEM opportunities together.

Students will:

- Discover local industries
- Enhance interpersonal skills with different peers
- Exercise judgement & critical thinking in varied situations
- Learn about, and with, advanced technologies
- Refine their communication skills

Curriculum Focus & Capabilities:

- | | |
|----------------|--------------------------------|
| • Science | • Arts & Humanities |
| • Technologies | • Business & Economics |
| • Engineering | • Critical & Creative Thinking |
| • Mathematics | • Personal & Social |

Technical & Personal Skills:

Each term will have a different technology and skills focus while developing personal capabilities



I come to Girls in STEM because the Tech School always provides hands on experiences and we get to work in teams.

STEM Academies

 **4 Days**  **Up to 75 Students**  **Years 9-11**

Our STEM Academies program is expanding in 2027, offering two branches: Engineering and Information Technology (new!). The Academies bring together like-minded students from across our partner schools to explore STEM interests, tackle real world challenges, connect with industry professionals and discover future study and career pathways.

Each Academy runs across four full-day sessions during Terms 2 and 3, offering immersive, hands-on learning beyond the classroom.

Students can self-nominate for their preferred Academy. While a natural progression for Girls and Boys in STEM participants, the Academies are open to all interested students from our partner schools.

Students may participate in one Academy per year, with opportunities to explore other Academy programs in subsequent years.

Students will:

- Learn about discipline specific STEM knowledge and skills
- Meet mentors and professionals from local industries
- Discover STEM pathways in further education and work
- Build a collaborative network of like minded peers and mentors

Curriculum Focus & Capabilities:

- | | |
|---------------|--------------------------------|
| • Science | • Critical & Creative Thinking |
| • Technology | • Personal & Social |
| • Engineering | • Ethical |
| • Mathematics | • Numeracy & Digital Literacy |

Technical & Personal Skills:

Scientific inquiry, key science skills, laboratory safety, systems thinking, design, prototyping, innovation, problem solving, communication, collaboration, computer science, technical knowledge

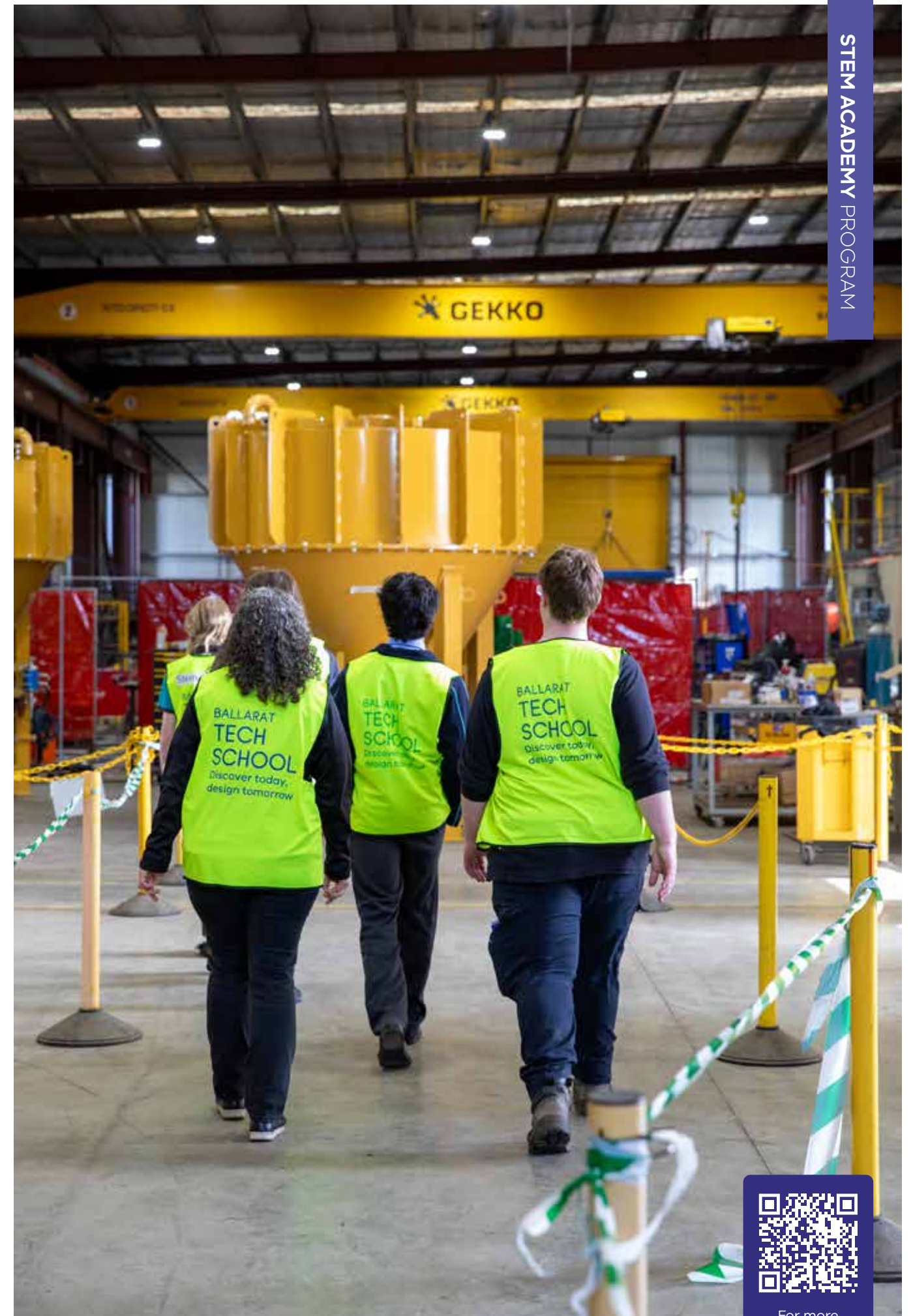


Engineering Academy

Explore different types of engineering careers and pathways through hands-on challenges, industry visits and opportunities to learn directly from engineering professionals.

Information Technology Academy

Discover information technology (IT) through computer building, cybersecurity and artificial intelligence (AI), alongside industry visits and exploration of emerging technologies and career pathways.



For more information scan the QR code.



For more information scan the QR code.



GO DEEP SPECIAL OPPORTUNITIES

Behind The Lens



8 x 2 Hours



Up to 12 Students



Years 10-12

Focused on teaching practical skills in a group environment, Behind The Lens shows students the techniques used to produce their favourite films and TV shows.

Over the course of 8 x 2-hour sessions, students will learn what happens behind the scenes of large film productions, and develop the skills to produce high quality short films of their own.

As is the nature of film production, Behind The Lens is heavily focused on group work, helping students develop confidence in their own skills while learning to trust the skills of others and work alongside them.

Over the course of the program, each student will create:

- 'In-camera' short films
- Cinematography demonstrations
- Two page scripts
- Multi-cam dialogue scenes
- One crewed short film as a cohort

Whether students prefer to take charge, use a camera, write a story or problem solve logistics, Behind The Lens teaches the skills necessary as a foundation for a career in film.

Students will:

- Work in groups to produce short films
- Work hands on with high-end film equipment
- Learn the processes of film pre-production

Curriculum Focus & Capabilities:

- | | |
|-----------|--------------------------------|
| • Media | • Personal & Social |
| • English | • Critical & Creative Thinking |
| • Arts | • Ethical |

Technical & Personal Skills:

Collaboration, scriptwriting and formatting, cinematography, sound recording, film editing



Program Variation:

Sections of Behind The Lens can also be delivered in the classroom at your school through a 2-hour master class. Please contact us to discuss these options.



GO CAREER PROGRAMS (VCE & VCE VM)

These programs have a post schooling pathways focus that targets VCE, VCE VM & VET requirements for further study and/or work readiness. They utilise our resources to improve student assessment and link to local and future industry pathways and opportunities.

Some of our VCE programs are designed to meet specific unit and learning outcomes and can fit with most schools' subject timetabling. However, others require more time to achieve the desired goals.

Work Experience and Professional Learning provide opportunities for students and teachers to invest in skills and knowledge to power their future careers.



For more information scan the QR code.



GO CAREER PROGRAM

Game of Drones Systems Engineering



1 Day Up to 24 Students Years 10-VCE

In the Game of Drones, you win when you fly! Drones are currently used in a large variety of industries as well as for recreational purposes. From inspecting wind turbines or agricultural crops to scientific research and professional racing, there are many careers on offer for drone pilots.

Game of Drones gives students hands on experience learning to code, test and fly drones whilst discussing what the future of drones may look like. As sessions include wiring a model drone to an Arduino, testing a custom made rig with a focus on writing, editing and testing flight code, the program lends itself to students currently studying or planning to study subjects such as Systems Engineering who will have a basic understanding of electrical circuits. The day culminates in a "Top Gun" flying challenge to see who can earn their "wings".

Students will:

- Understand the components of a drone
- Develop an understanding of a basic electronic circuit and how it functions to control electric motors
- Create a successful drone prototype test rig
- Automate a drone flight to complete a set mission
- Learn to use and code an Arduino microcontroller

Curriculum Focus:

- Unit 2 (AoS1): Electrotechnological systems design
- Unit 2 (AoS2): Producing and evaluating electrotechnological systems

Technical & Personal Skills:

Prototyping, computer science, hardware and software systems, problem solving, collaboration, systems thinking



The Tech school has amazing facilities. The flying simulators, the drones and the coding was an amazing overall experience.

Redox & Renewables



 3 Hours  Up to 24 Students  VCE

Introduced in 2025, this future focused VCE Chemistry program provides an opportunity for students to investigate chemical reactions such as redox through a real world industry lens. Students apply principles that are important to the design, development and production of various technologies including renewable energy storage systems.

Students work hands-on with lithium-ion, PEM electrolyser, hydrogen fuel cell and vanadium flow battery technologies, supported by digital interactive tools. Along the way they see how a separator or membrane keeps half-reactions apart while ions still flow; how the electrolyte of a flow battery connects redox to thermodynamics and equilibrium; and how measured voltages and gas volumes test predictions from the electrochemical series, cell voltage calculations and stoichiometry.

The program will also provide the opportunity to undertake the experimental component of the Scientific Investigation SAC for Units 3/4.

Students will:

- Assemble and test a lithium-ion coin cell battery
- Change vanadium's oxidation state chemically, then electrically
- Experiment with flow battery settings
- Disassemble, rebuild and test a PEM electrolyser
- Test hydrogen in single and multi-stack fuel cells
- Use digital interactive tools alongside every activity

Curriculum Focus & Capabilities:

- Unit 3 (AoS2): Production of chemicals using electrolysis
- Unit 4 (AoS3): How is scientific inquiry used to investigate the sustainable production of energy and/or materials?

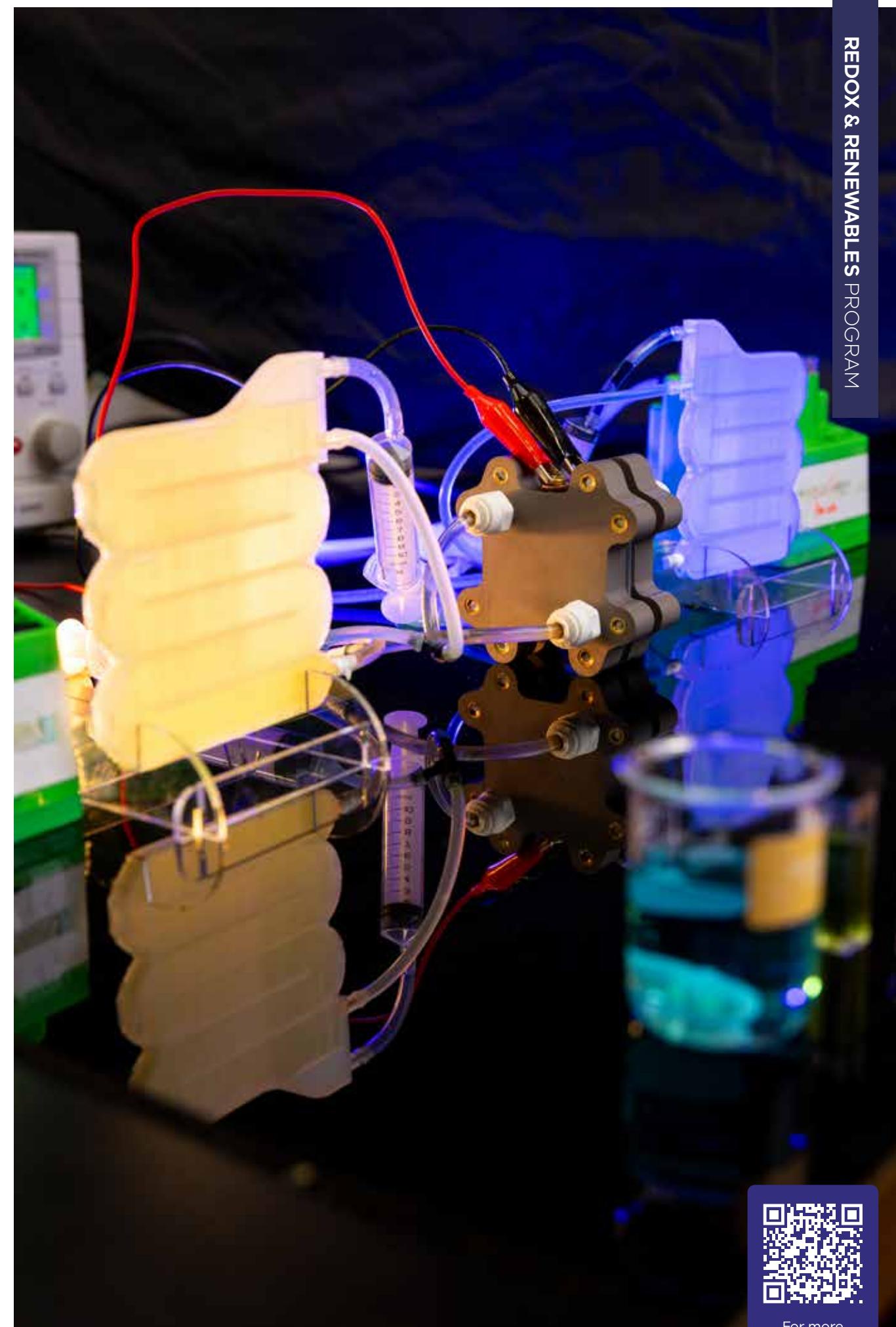
Technical & Personal Skills:

Scientific inquiry, key science skills, problem solving, communication, collaboration, systems thinking



Program Details:

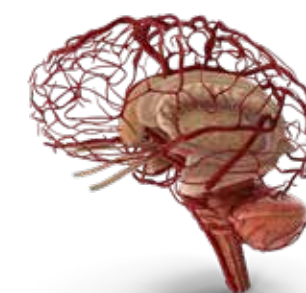
This program aligns with the Victorian Government and Committee for Ballarat's strategic direction on Clean and Renewable Energy skills and knowledge. It is also designed to focus on key skills and knowledge identified in past VCE Chemistry Examiner Reports.



For more information scan the QR code.



Perceptual Distortion VCE Psychology



2 Hours



Up to 28 Students



VCE



Requisite Learning

Can you trust your senses? Can your perception of reality be altered? In this program, we look at how your nervous system can be affected by perception and how sensory information can be distorted.

The first activity of this program exposes students to different environmental experiences, moving from calming meditation to an exhilarating virtual reality rollercoaster. Students can apply their understanding of research methods in an interactive way while generating primary investigation data (heart rate) for analysis.

In the second activity, students will explore sensory perception systems and participate in hands on tasks that can demonstrate distortion of those systems, specifically taste.

Students will:

- Examine the influence of biological, psychological & social factors on visual perception & gustatory perception
- Discover the fallibility of perception through sensory exposure
- Identify experimental variables & how they are measured
- Systematically generate, collect, record and summarise primary qualitative and quantitative data

Curriculum Focus:

- Unit 2 (AoS2): What influences a person's perception of the world?
- Unit 2 (AoS3): How do scientific investigations develop understanding of influences on perception and behaviour?

Technical & Personal Skills:

Scientific investigation skills, critical thinking, communication, collaboration, observation, and self-reflection



Requisite Learning:

Some knowledge and pre-learning is required to understand this program content. Information on pre and post visit materials can be accessed through our website.



For more information scan the QR code.

Augmented Consciousness VCE Psychology



 2 Hours  Up to 26 Students  VCE  Requisite Learning

Consciousness can be thought of as operating on a continuum, and altered states can occur naturally (e.g. sleep, daydreaming) or be induced (e.g. alcohol, anaesthesia). Measuring these states usually involves methods like Electroencephalography (EEG) and speed and accuracy assessments.

Both sleep deprivation and alcohol-induced states impact cognitive, emotional, and behavioural functions. A full night's sleep deprivation (24 hours) is akin to a BAC of 0.1, while a BAC of 0.05 corresponds to 17 hours of partial sleep deprivation within 24 hours.

In this program, students use Fatal Vision "beer" and "drowsiness" goggles to simulate altered consciousness states. This allows them to compare the effects of sleep deprivation and alcohol induced states, deducing emotional and cognitive changes. Activities offer an engaging and enjoyable way to generate primary data for subsequent analysis and evaluation.

Students will:

- Review the nature of consciousness
- Compare the effects of alcohol induced & sleep deprived states and generate data for analysis & evaluation
- Discuss the affective, cognitive & behavioural effects of sleep deprivation
- Apply research methodologies & identify extraneous variables

Curriculum Focus:

- Unit 4 (AoS1): How does sleep affect mental processes and behaviour?
- Unit 4 (AoS3): How is scientific inquiry used to investigate mental processes and psychological functioning?

Technical & Personal Skills:

Scientific investigation skills, critical thinking, self-awareness, communication, collaboration, observation, and informed decision making



Requisite Learning:

Pre-visit learning includes an understanding of consciousness and sleep across the lifespan. It's useful to have introduced key science skills. Information on pre and post visit materials can be accessed through our website.



For more information scan the QR code.



Molecular Genetics of Disease

VCE Biology



2.5 Hours



Up to 24 Students



VCE

Following the extraordinary discovery of the double-helical structure of DNA and the subsequent completion of comprehensive sequencing of the human genome, the importance of genetics and the associated career opportunities continue to grow.

In this program, students will use gel electrophoresis, together with a family's medical history, to diagnose a monogenic or "single-gene" disorder and practise providing valuable genetic counselling.

While the gels are running, students will be led by a scientist on a tour of the Fiona Elsey Cancer Research Institute (FECRI), with a focus on the real world applications of gel electrophoresis in their research. Back in the lab, students will analyse their gel results to infer the genotypes of family members and use these to make a diagnosis.

Students will:

- Undertake laboratory work in small teams
- Apply an understanding of genetics to a real-life scenario
- Analyse the outcome of genetic testing
- Tour a modern research laboratory
- Learn about the safe use of laboratory technology

Curriculum Focus:

- Unit 2 (AoS1): How is inheritance explained?
- Unit 3 (AoS1): What is the role of nucleic acids and proteins in maintaining life?
- Unit 4 (AoS3): How is scientific inquiry used to investigate cellular processes and/or biological change?

Technical & Personal Skills:

Scientific inquiry, key science skills, problem solving, collaboration, communication



Supported by:

Fiona Elsey
CANCER RESEARCH
INSTITUTE



For more
information
scan the
QR code.

Photosynthesis & Respiration VCE Biology

 3 Hours / 1 Day  Up to 24 Students  VCE

As our climate continues to change and our planet tries to adapt to industrialisation and human endeavour, understanding the basic processes of life on Earth will be critical both to protecting our home and to developing the knowledge and skills required to potentially find a new one.

In this program, students get hands-on experience as they investigate the processes of photosynthesis and respiration in response to a range of environmental conditions.

To do this, students will employ an experimental apparatus consisting of yeast/algal cells immobilised in an algal gel, enabling CO₂ production/consumption to be measured. Results are recorded and available for access at school to help students process and analyse their data for potential use in a SAC.

Students will:

- Undertake laboratory work in a small team
- Measure cellular processes
- Apply an understanding of the biochemical processes of photosynthesis and respiration
- Conduct meaningful analysis of experimental results

Curriculum Focus:

- Unit 3 (AoS2): How are biochemical pathways regulated?
- Unit 4 (AoS3): How is scientific inquiry used to investigate cellular processes and/or biological change?

Technical & Personal Skills:

Scientific inquiry, key science skills, problem solving, collaboration, communication



Program Variation:

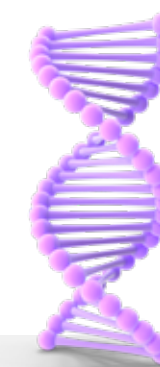
This program can be offered at a Year 10 level as a Go Deep option. Students would prepare yeast alginate spheres and then perform a cellular respiration experiment. They would NOT complete the photosynthesis experiment.



For more information scan the QR code.



Transformation & Gene Regulation VCE Biology



1 Day



Up to 24 Students



VCE

Students will get hands-on experience in modern molecular biology techniques. They will work with a plasmid containing the insulin gene fused to the green fluorescent protein (GFP), under the control of the arabinose operon.

This program enables students to investigate the process of bacterial transformation as they introduce the GFP containing plasmid into *E. coli* and select for its presence using an antibiotic. They will also investigate gene regulation in bacteria as they induce expression of GFP by adding arabinose in the growth medium and visualise fluorescence by excitation under UV light.

Students will set up and run a controlled scientific experiment that clearly demonstrates the relationship between independent and dependent variables.

There is time to complete one elective activity. Please see program variation for options.

Students will:

- Undertake laboratory work to perform a genetic transformation
- Apply an understanding of gene regulation to control expression of a fluorescent protein
- Analyse and interpret experimental results
- Tour a modern research laboratory

Curriculum Focus:

- Unit 3 (AoS1): What is the role of nucleic acids and proteins in maintaining life?
- Unit 4 (AoS3): How is scientific inquiry used to investigate cellular processes and/or biological change?

Technical & Personal Skills:

Scientific inquiry, key science skills, problem solving, collaboration, communication



Program Variation:

Select one of:

- Fiona Elsey Cancer Research Institute
- Restriction digest followed by electrophoresis
- Column chromatography of expressed protein



For more information scan the QR code.

Work Experience

 **5 Days**  **Year 10**  **Requisite Learning**

Get ready to learn, grow, and have a blast. It's sure to be a week to remember!

Work experience at the Ballarat Tech School aims to provide students with an engaging and structured introduction to working life in a STEM learning environment.

Within our state of the art facility, students will have extensive access to all things STEM related and experience first hand how staff with diverse skill sets collaborate to create meaningful and engaging learning programs.

Students will have the opportunity to work with educators, technicians and administrators. Therefore we encourage students to think deeply about what they want to achieve from their week with us to maximise the experience and equip themselves well for the future world of work.

The Ballarat Tech School also offers a limited number of Structured Workplace Learning (SWL) placements throughout the year. To apply for either placement, please scan the QR code below.

Students will:

- Gain insight into full time working life
- Explore different roles and skill sets in a workplace
- Engage with several physical and digital technologies
- Assist with STEM learning programs
- Develop valuable professional communication skills

Curriculum Focus & Capabilities:

- Critical & Creative Thinking
- Personal & Social
- Communication Skills
- Digital Literacy

Technical & Personal Skills:

Students will have opportunities to develop technical and personal skills relevant to a professional workplace. They can also identify specific focus areas during their application and interview process.

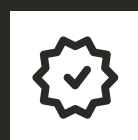


Requisite Learning:

All students interested in Tech School Work Experience or SWL will need to successfully complete the application and interview process, details of which can be found on our website.



For more information scan the QR code.



TEACHER PROFESSIONAL LEARNING

Available at no cost for teachers across a variety of content, pedagogy and technology areas, professional learning will be regularly available and promoted through our various communication channels.

Sessions can also be undertaken within onsite core program delivery and teachers are encouraged to reach out to co-design programs that address their specific skill or knowledge needs.



For more
information
scan the
QR code.



TECH SCHOOL AT YOUR SCHOOL

We understand that attending the Tech School is not always possible, so we have designed a range of options that can bring some of the Tech School programs, equipment and expertise to your school instead.

Some examples include our Equipment Loan Program for Makeblock laser cutters or STELR Housing kits or hybrid program delivery where some elements are delivered at your school or virtually and the rest at the Tech School.



For more
information
scan the
QR code.



NEW PROGRAMS AT THE TECH SCHOOL

In 2027 the Ballarat Tech School will be developing a number of exciting new programs. Throughout the year we will be offering opportunities for schools to get involved in trialling elements of these programs.

Scan the QR code below for updates and to register your interest in helping us to test our new programs.



For more
information
scan the
QR code.





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