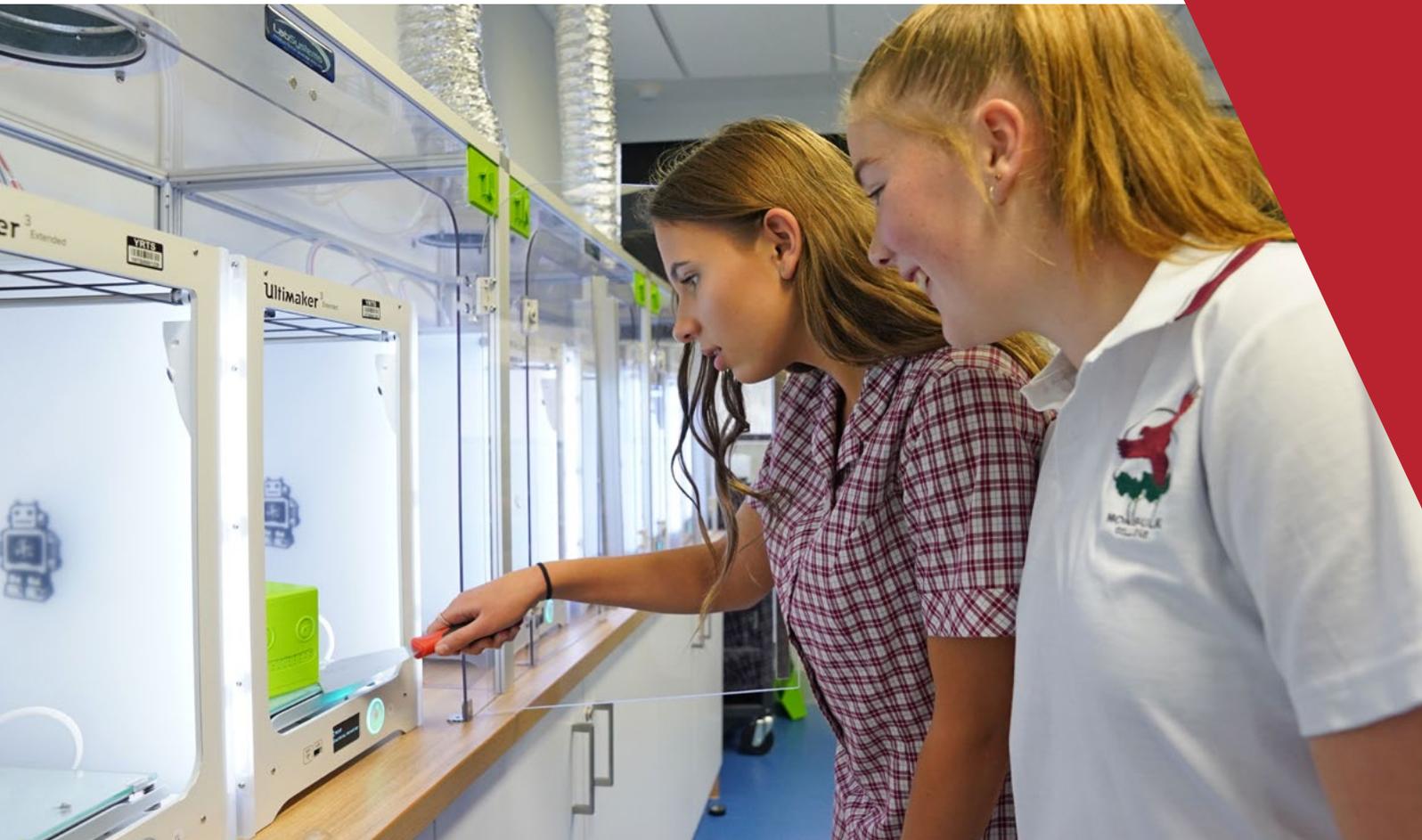


YARRA RANGES TECH SCHOOL

Technology Expanding Children's Horizons



2022

PROGRAM OVERVIEW

About

Yarra Ranges Tech School

Yarra Ranges Tech School is part of the Victorian Government's commitment to make Victoria the 'Education State'. We draw on the Lilydale Lakeside Campus, faculties and our stakeholders to introduce students to the applications of human-centred design thinking and innovative leading-edge technologies as a means of problem solving real-world challenges.

We also introduce teachers to new pedagogies and ways to bring technology into the classroom. Our programs emphasise critical Enterprise skills in addition to Science, Technology, Engineering, Arts and Mathematics (STEAM) skills required for the 21st century.

Our Vision

We will excite and engage secondary school students in Science, Technology, Engineering, Arts and Mathematics to prepare them for the industries and jobs of the future.

Key Learning Objectives

- To prepare students for a changing world which is highly STEM focused
- To strengthen students employability skills
- To link education to growing industries
- To create a Tech School which is locally led and operated

Co-Design

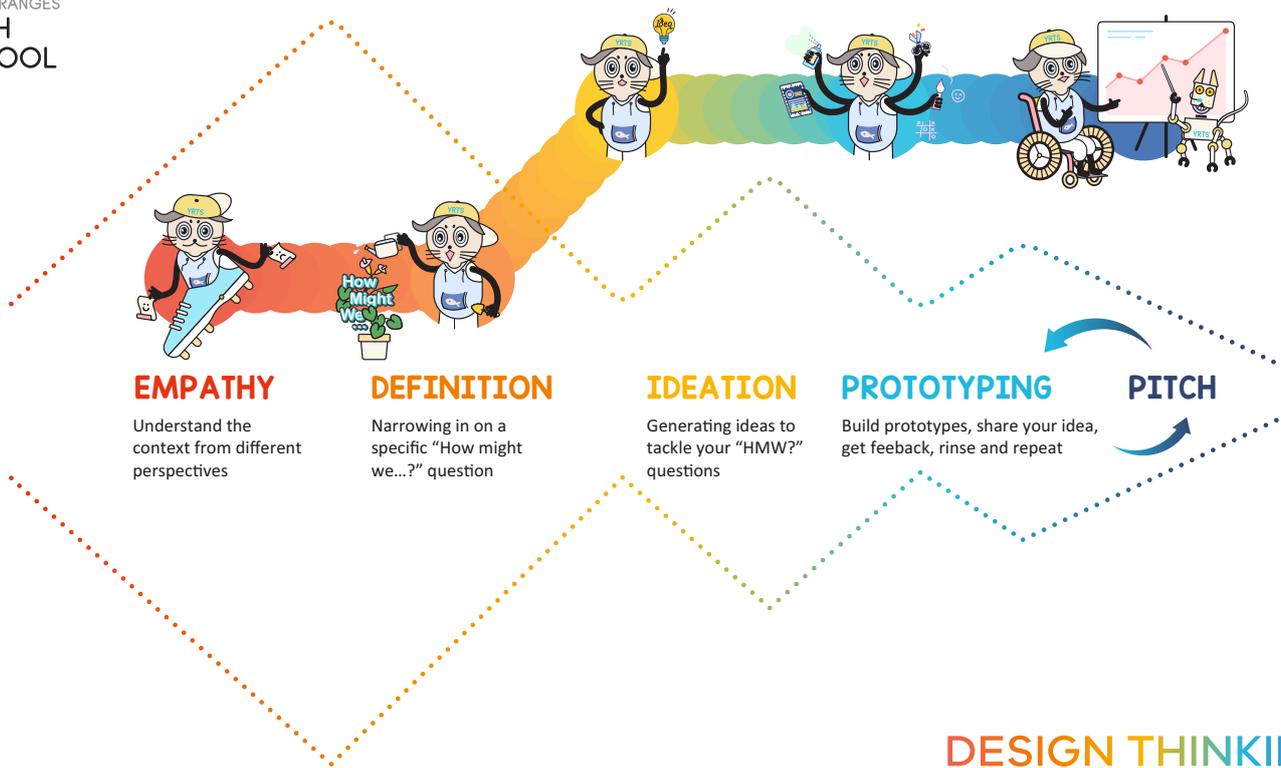
A fundamental principle of Tech School programs is ensuring that students are accessing leading-edge technologies and being introduced to current trends, issues and opportunities in the real world. Yarra Ranges Tech School achieves this by working closely with our industry, tertiary and community partners on the development of our learning programs. These stakeholders contribute content, expertise, advice and in some cases, site-tour and mentor opportunities for our students.



Design Thinking

We use a six-stage thinking process to allow students to experience collaboration as a team, to solve real-world problems and develop new opportunities. As the diagram shows, this process requires students to apply both divergent and convergent thinking to problem solving. This model allows tailoring of our programs to suit different learning needs, class structures and outcomes.

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SCHOOL



At each stage of the process, we seek students to adopt a particular mindset, skillset and toolset.

Mindset	Skillset	Toolset
How you see, perceive and view the world around you	How you act and behave based on your capabilities, knowledge and understanding	What mechanisms you use to develop your skills and achieve your objectives

YARRA RANGES
TECH
SCHOOL

Onsite
Programs





**BOX HILL
INSTITUTE**

YARRA RANGES

TECH SCHOOL

Connecting students
to their futures

THE
EDUCATION
STATE

VICTORIA
State
Government

Education
and Training

NO
SMOKING



Smart Farming

Duration

This program can be undertaken on consecutive days or spread over a term.

1 day for immersion activities.

2 days at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from Level 7 to Level 10.



This program introduces students to horticulture and agricultural practices. Students will investigate current trends and explore the application of technology and innovation that can benefit or enhance current agricultural practices. On day one, students will experience horticulture and research sites, interacting with industry professionals and building research and empathy knowledge*.

The students will then spend day 2 and 3 in teams, investigating and practicing techniques of different smart farming technologies. On the final day, they will present their solutions to the challenge they identified on day one, demonstrating prototypes and their learning journey.

Key Learning Objectives

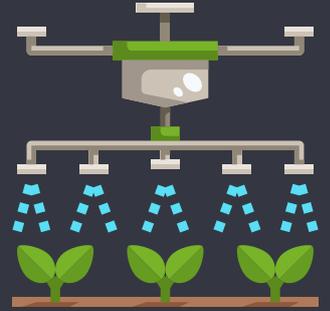
- To understand the needs of growers and farmers to maximise production yields while improving sustainability
- To gain an understanding of current farming processes and identify future opportunities
- To design a smart system which collects farming data (e.g. light, temperature, moisture) and uses this information to adjust growing conditions

Technologies Introduced

Students will develop knowledge and skills in:

- Sensor design
- Autonomous Vehicles
- Robotics
- Coding
- Electronics for Internet of Things

* These visits may be physical or virtual depending on factors such as weather, site availability and government policies relating to student excursions



Industry Alignment

Students will be exposed to technologies and processes used in:

- Digital Electronics
- Sustainability & Renewables
- Food & Fibre
- Transport & Logistics

Curriculum Areas Covered

Tech		English	Arts				Humanities			Capabilities		
Science	Design & Technologies	English	Dance	Media Arts	Music	Visual Arts	Economics & Business	Geography	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social
Digital Technologies	Mathematics	EAL	Drama			Visual Comm & Design		History				
	Health & Physical Education											



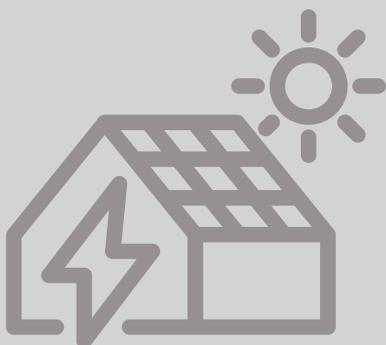
Sustainable Housing

Duration

This program can be undertaken on consecutive days or spread over a term. **2 days** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from level 7 to level 10.



Building on virtual immersive visits focused on off-the-grid housing projects and Box Hill Institute Trades and Design Faculties, students will work in teams to design & develop an eco-friendly house.

This program introduces students to digital simulation of a house, data analysis, as well as physical model building. Students analyse factors affecting solar and wind energy generation, building materials and house placement, using computer aided design and precision manufacturing techniques.

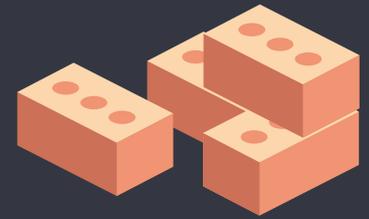
Key Learning Objectives

- To understand the key factors relating to energy efficiency in house design
- To understand the concepts of heat absorption, conduction and reflection
- To understand the notion of embedded energy in building materials
- To select materials for energy efficiency, considering the material's embodied energy
- Design & modeling using simulation-based scientific tools

Technologies Introduced

Students will develop knowledge and skills in:

- Sustainable Buildings
- Production Processes
- Sensor Design
- 3D Computer-Aided Design Software
- Digital Simulation



Industry Alignment

Students will be exposed to technologies and processes used in:

- Precision Manufacturing
- Digital Electronics
- Sustainability and Renewables
- Urban Planning and Design

Curriculum Areas Covered																					
		Tech				English		Arts				Humanities			Capabilities						
Year Level	Science	Design & Technologies	Digital Technologies	Mathematics	Health & Physical Education	English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social
7 & 8																					
9 & 10																					



High Tech Hospital

Duration

This program can be undertaken on consecutive days or spread over a term. **2 days** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from level 7 or level 8.



Over 2 days students are challenged to think about the hospital of the future and how technology can improve efficiency in hospital's operations and boost patient morale. Students will learn about the systems behind such technologies and how they operate using programming techniques. Teams of students are introduced to robotics, coding and electronics and then apply their learned knowledge to develop their solution to the challenge.

Key Learning Objectives

- To gain understanding of sequential commands
- To understand electrical circuits
- To use electronics to prototype assistive technology
- To understand the mechanics of robots
- To gain an understanding of emerging medical technology

Technologies Introduced

Students will develop knowledge and skills in:

- Robotics
- Circuitry
- Coding
- Electronics

Industry Alignment

Students will be exposed to technologies and processes used in:

- Electronics
- Programming
- Robotics
- Health Services
- Telecommunications



Curriculum Areas Covered

Tech		English		Arts				Humanities				Capabilities								
Science	Design & Technologies	Digital Technologies	Mathematics	Health & Physical Education	English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social



Wearable Technology

Duration

This program can be undertaken on consecutive days or spread over a term.

2 days at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from level 7 to level 10.



Students are introduced to electronics, programming and precision manufacturing techniques.

Using the knowledge gained, and working in teams, students design, test and prototype different ideas for wearable technology to address a user's need.

Key Learning Objectives

- To gain an understanding of Human-Centred design of wearable technologies
- Utilize computer-aided design software for designing wearables
- Utilize different precision manufacturing techniques for creating prototypes
- To understand electronics and their application to wearable technologies
- To understand how electronics can be coupled with precision manufactured items

Technologies Introduced

Students will develop knowledge and skills in:

- Sensor Design
- Coding
- Electronics
- 3D Printing
- 3D Computer-Aided Design Software

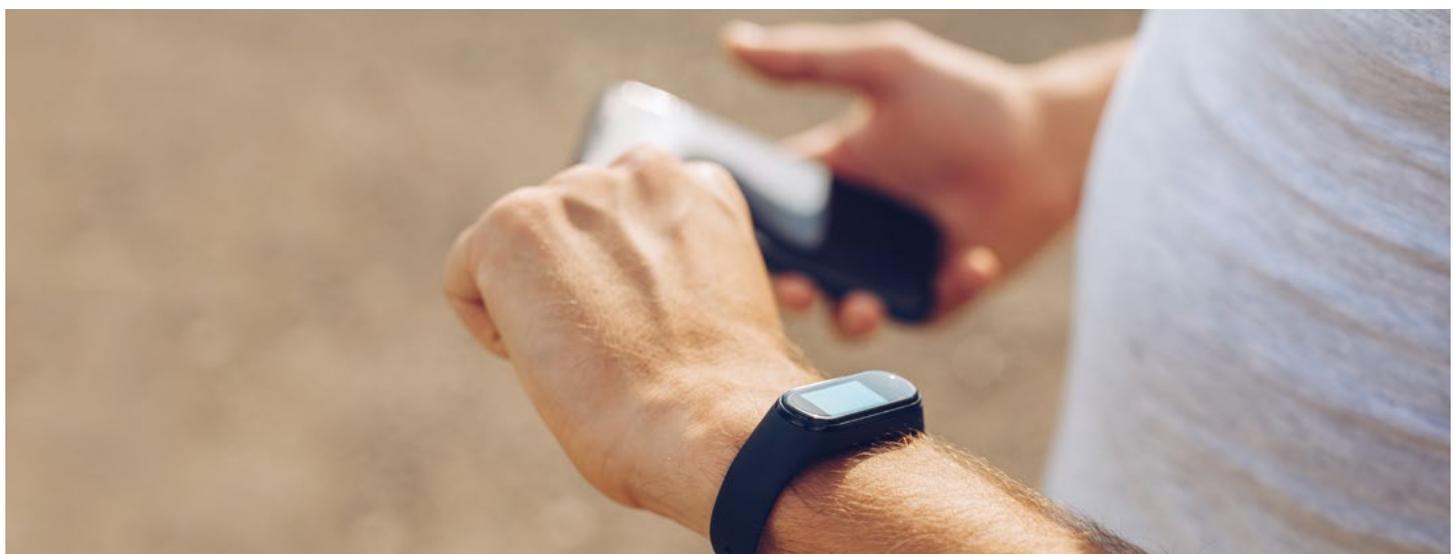


Industry Alignment

Students will be exposed to technologies and processes used in:

- Electronics
- Precision Manufacturing
- Programming

Curriculum Areas Covered																				
Tech				English		Arts				Humanities			Capabilities							
Science	Design & Technologies	Digital Technologies	Mathematics	Health & Physical Education	English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social



Design Thinking

Duration

This program can run from **2 days** to **20 weeks** through a mix of remote and on-site delivery.

Curriculum Level

This program is suitable for students at level 6 or above including VCE and VCAL.



Students undertaking this program will work in teams of 4 to 6 students on a specific problem or challenge area.

This may be provided by a Yarra Ranges Tech School industry partner, community group or their own school. Students will progress through each stage of Human Centred Design Thinking (HCDT) – Empathy, Define, Ideate, Prototype & Test and Pitch.

Students are introduced to various tools, engagement techniques and processes to create a final result. HCDT is a very popular technique used extensively by companies and professionals to drive innovation and development. Skills and experience in this area are highly valued within the workforce. Participating students will be exposed to industry careers and professionals throughout these programs.

This program is ideal for specialised student interest or study groups, class wide projects, career focused activities or VCAL projects. The flexibility inherent in HCDT means this program can be tailored to specific school requests, i.e. to act as an enhancement to an existing project-based class or subject, or to create a new elective option for students.

Contact Yarra Ranges Tech School to discuss this program further*.

(03) 9286 9584

yrtts-bookings@boxhill.edu.au

Mon-Fri, 9:00am - 4:30pm

* We recommend that schools provide at least 1 school term (10 weeks) notice to ensure a quality tailored program can be developed for students.



Key Learning Objectives

- To develop an understanding of Human Centred Design Thinking (HCDT) methodology and processes
- Develop creative and varied open-ended solutions to real-world challenges
- To develop skills in empathy, communication, teamwork, and creative & critical thinking
- To examine and understand different careers, occupations and career pathways in an industry sector

Technologies Introduced

Students will develop knowledge and skills in a range of technologies available at Yarra Ranges Tech School and within the industry sector selected for the project.

Industry Alignment

Students will be exposed to technologies and processes used in the industry or industries selected for the project.

Curriculum Areas Covered																						
Year Level	Tech					English		Arts					Humanities				Capabilities					
	Science	Design & Technologies	Digital Technologies	Mathematics	Health & Physical Education	English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social	
7 & 8																						
9 & 10																						

* Please contact us for mapping to VCE and VCAL curriculum.

Insectoids

Duration

This program can be undertaken on consecutive days or spread over a term. **2 days** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from level 8 to level 10.



This program introduces students to biomimicry, challenging them to look at how insects have developed specific abilities and biological features to overcome challenges.

The program puts students in the role of developers. Their challenge: to design a robot that can clear obstructions from water pipes. As a team they will investigate insects, explore issues around water science, mechatronics, digital design and engineering principles. Over the two days the students will program small insectoid robots in addition to using Virtual Reality to research, design and then navigate through a pipe maze to clear obstructions.

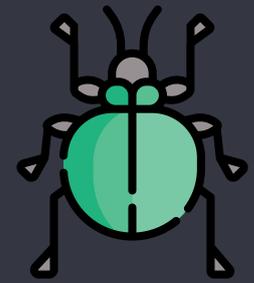
Key Learning Objectives

- To understand how team work can solve current and future real world problems
- To combine various sources, including linking known and new information and technologies, to create original concepts and ideas
- To understand the roles and activities involved in the development of Virtual Reality and Robotics design
- To understand the importance of understanding environmental factors and their impact on the built environment

Technologies Introduced

Students will develop knowledge and skills in:

- Sensor design & application
- Autonomous vehicles
- Robotics
- Coding
- Virtual Reality



Industry Alignment

Students will be exposed to technologies and processes used in:

- Industrial Design
- Robotics
- Environmental Science
- Mechanical & Mechatronic Engineering
- Project Management
- Climate Change Science

Curriculum Areas Covered																					
		Tech				English		Arts					Humanities				Capabilities				
Year Level	Science	Design & Technologies	Digital Technologies	Mathematics	Health & Physical Education	English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social
7 & 8	■	■	■	■		■												■	■		■
9 & 10	■	■				■												■	■		



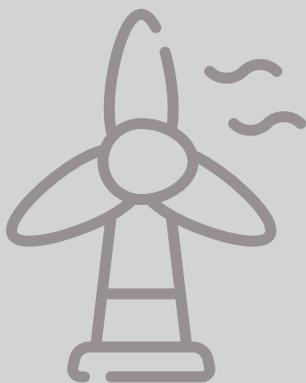
Sustainable Energy - Data Science

Duration

This program is **1 day** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students from level 7 to level 10.



This program introduces students to sustainable energy sources, energy markets, basic geographical information systems and the role of data analytics as a means to make informed decisions.

Working in teams, as part of a start-up company, students are required to identify opportunities for clean, renewable energy supply identifying suitable areas within Victoria to establish solar and wind farms.

Students will be required to use their analysis of wind, solar exposure, existing energy infrastructure, townships and any other relevant geographical, ethical and social impacts on their decision.

Key Learning Objectives

- To understand the importance of Big Data
- To analyse climate and infrastructure data
- To use Python and Jupiter Notebooks to organise and “clean” data
- To use Tableau software to visualise and present data
- To understand the key factors relating to choosing the location for renewable energy power-stations and how to select the best location based on competing technological, economic and social goals



Technologies Introduced

Students will develop knowledge and skills in:

- Python Programming
- Jupyter Notebook for Data Analytics
- Tableau Software
- Big Data Analytics
- Geographical Information Systems and multi-layered data visualisation

Industry Alignment

Students will be exposed to technologies and processes used in:

- Sustainability & Renewables
- Programming
- Data Analytics
- Engineering & Design of Power Plants and Associated Network Infrastructure

Curriculum Areas Covered

Tech		English	Arts				Humanities				Capabilities			
Science	Design & Technologies	English	Dance	Media Arts	Visual Arts	Visual Comm & Design	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social	
Digital Technologies	Mathematics	EAL	Drama	Music		Civics & Citizenship								
	Health & Physical Education													

Introduction to Design Thinking & Yarra Ranges Tech School

Duration

This program is **1 day** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students at level 6 to level 8.

Students in team of 4 to 6 are introduced to sensors, controllers and coding in a design thinking challenge. Students use the knowledge gained to ideate, design, prototype and test different ideas to produce solutions to their identified problem.

Unlike our broader Human Centred Design Thinking (HCDT) program, this is designed as an introduction for junior secondary students to HCDT but also to build relationships and friendships among students at the start of their secondary schooling.

Key Learning Objectives

- To identify and use sensors to monitor the environment and collect data
- To use design thinking methodology to ideate different solutions to a real world challenge
- To understand the application of coding and electronics in creating innovative user focused solutions

Technologies Introduced

Students will develop knowledge and skills in:

- Electronics
- Coding
- Sensors
- Computer-Aided Design
- Robotics





Industry Alignment

Students will be exposed to technologies and processes used in:

- Industrial Design
- Electronics
- Programming
- Robotics

Curriculum Areas Covered

Tech		English	Arts				Humanities			Capabilities					
Science	Design & Technologies	English	Dance	Drama	Media Arts	Music	Visual Arts	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social



Yarra Ranges Tech School Special Needs Program

Duration

This program series consists of **7 visits** to the Tech School and can be undertaken on consecutive days or spread over a term or academic year.

Curriculum Level

This program has been matched towards curriculum criteria from Level A – Level 1 but can be extended beyond these levels if needed.



This series of 7 discreet programs aims to give students an experience of a range of technologies and industries at Yarra Ranges Tech School.

Students are encouraged to work in teams to solve problems through learning and exploring a variety of technologies. These technologies will help them overcome every day issues or undertake industry assignments such as choosing appropriate eyewear or making a promotional video.

Key Learning Objectives

- To respond and participate in group activities.
- To visualise, generate, and communicate design ideas through describing, drawing and modelling.
- To identify and explore digital systems (hardware and software components) for a purpose.
- To select materials for efficiency or to meet a brief.

Technologies Introduced

Students will develop knowledge and skills in:

- Autonomous Vehicles
- Sensor Design
- Digital Simulation
- Coding
- Electronics & Circuitry
- Robotics



Industry Alignment

Students will be exposed to technologies and processes used in:

- Industrial Design
- Mechanical Engineering
- Digital Design
- Precision Manufacturing



YARRA RANGES
TECH
SCHOOL

**Career Focused
Programs and
Teacher Professional
Development**





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State
Government

Education
and Training



Careers in STEAM



2022 Proposed Dates

- 16 February
- 16 March
- 18 May
- 15 June
- 27 July
- 24 August
- 12 October
- 23 November

Duration

- **1 hour** - Speaker Presentation
- **2 hours** - Workshop

This series has been created to highlight the fantastic people working in a range of STEAM related industries to demonstrate the importance of passion, pursuing your heart and lifelong learning. These sessions, many of which are focused in promoting Women in STEM, are accompanied by workshops for students attending, further enhancing the messages delivered by the speaker.

Sessions will run during school terms with Partner Schools invited to send students to the Tech School for a session. The speaker's presentations are live streamed and recorded allowing all partner schools to hear the powerful messages around career and education pathways. Teachers are encouraged to participate in the workshops and may even undertake specific Professional Development relevant to the workshops.

A list of speakers for 2022 will be released in late 2021 and partner schools will be able to nominate those they wish to attend.



Teacher Professional Development



Duration

These programs range from **2 hours** to multisession programs running across terms depending on their content.

Availability

These programs are available to all educators - early years, primary, secondary, tertiary; and any other educators or science communicators.



Yarra Ranges Tech School prides itself on delivering high quality Professional Development activities for educators. These programs build on the existing expertise, technologies and networks of Yarra Ranges Tech School to deliver comprehensive and high quality learnings.

Topics Covered

The Teacher Professional Development series comprises several ongoing regular sessions including those listed below. In addition, where opportunity arises, oneoff specialized programs may also be undertaken. Make sure you are on our Teacher PD mailing list to stay across these unique PD activities.

Our ongoing teacher PD programs include:

- Design 2 Innovate – Bastow endorsed Design Thinking*
- Human Centred Design Thinking as applied at YRTS
- Program technology sessions
- Program specific sessions
- Learning Management System and how to incorporate and adopt YRTS resources to the classroom

Delivery Modes

These programs use a variety of learning methods including:

- Onsite
- Remote
- Blended

Delivery Modes

Contact us at yrrts-bookings@boxhill.edu.au, check out our website or subscribe to our mailing list to learn about the upcoming Professional Development events being held by Yarra Ranges Tech School.

YARRA RANGES TECH SCHOOL

Other Areas of YRTS

MakerSpace & After School Program





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Education
and Training

NO
SMOKING



Other Areas of Yarra Ranges Tech School

MakerSpace @ YRTS

MakerSpace @ Yarra Ranges Tech School is a collaborative space that allows the community to grow, explore and expand their creativity.

From kids to adults, all will be able to access the space to create beyond their imagination with the variety of technology and resources available at their fingertips.

With a MakerSpace membership you will have access to the latest cutting edge technologies, including:

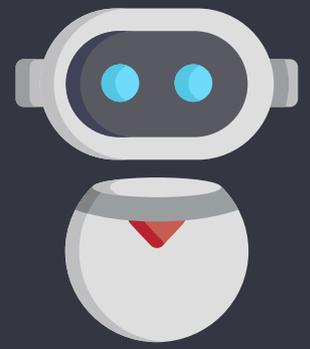
- Laser Cutter (Trotec Speedy 360)
- Water Cutter (Proto Max)
- Vinyl Printer & Cutter (HP Latex 115)
- 3D Printers (Ultimaker 3 Extended)
- CNC (Roland MDX 50A)
- CNC (Roland MDX 40A)
- Mini Work Tools (Cool Tool Unimat)
- Sewing Machines (Juki DDL-8700)

For a full list of technologies, please visit our website: yarrarangestechschool.vic.edu.au

Monthly MakerSpace memberships are now available –

Contact yrts-admin@boxhill.edu.au or call **9286 9584** to find out more!





After School Program

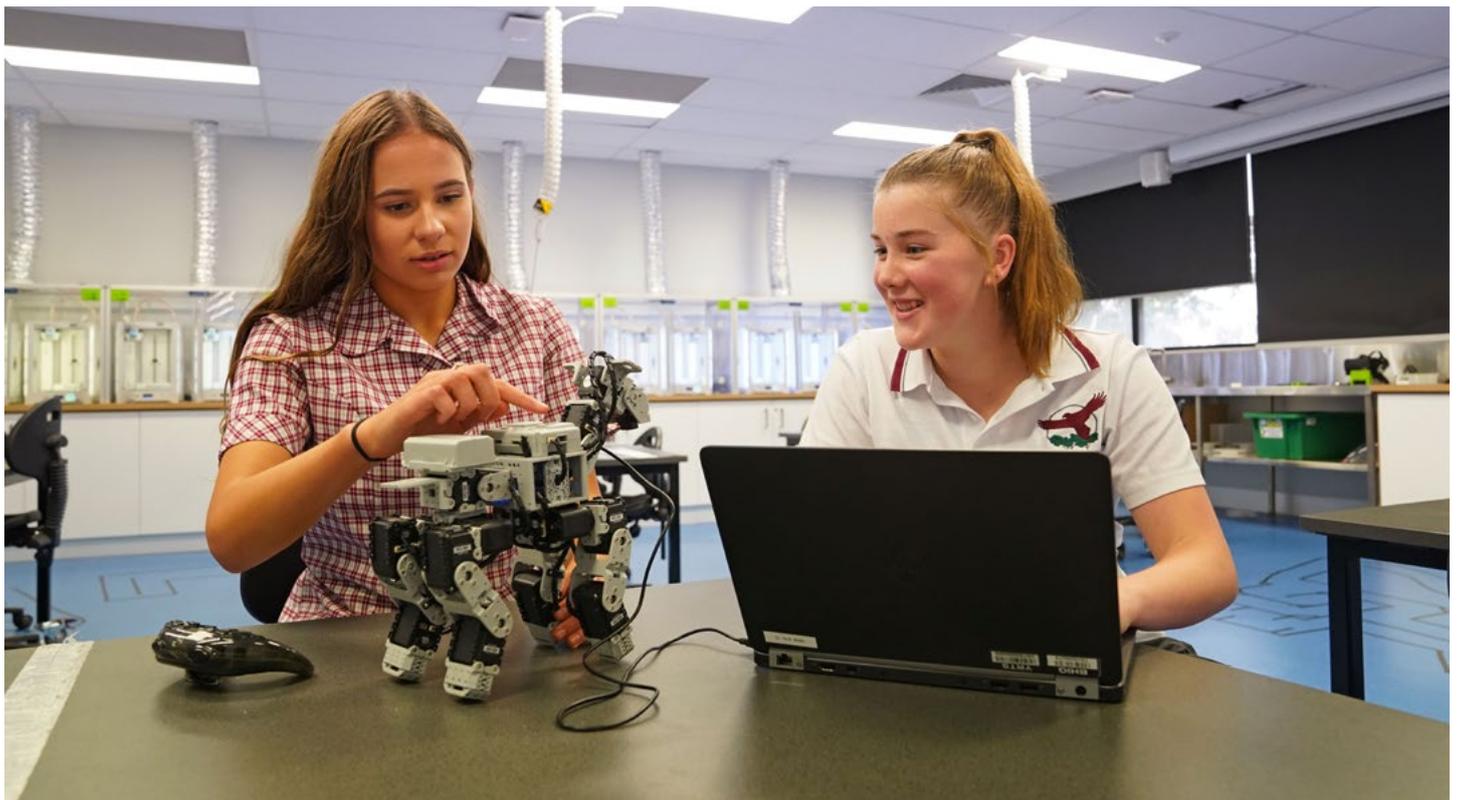
When: Every Friday afternoon during school term

Time: 3:15pm – 5pm

Cost: Visit our website for current costings

Age: 12 years old and over

Activities: Coding, E-Sports, Electronics, Robotics – VEX, Thymio, Donkey Cars



To find out more, please visit our website: yarrarangestechschool.vic.edu.au

To secure a place in the after school program –

Contact yrts-admin@boxhill.edu.au or call **9286 9584** to find out more!

Game Development - Virtual Reality

Duration

This program is spread across **3 weeks** at Yarra Ranges Tech School.

Curriculum Level

This program is suitable for students at level 8 or above.

Availability

This program will run with a minimum 10 students.



Students use industry-standard professional computer games design and development software to make a game using inspiration from nature. Their task is to use their creativity to create game environments and pitch their ideas.

Key Learning Objectives

- To be able to navigate the Unreal Editor interface to manipulate and transform 3D objects
- To be able to create a simple Blueprint visual script
- To be able to design and create a 3D game level out of pre-built components
- To understand how to make a simple 3D game using Unreal Engine

Technologies Introduced

Students will develop knowledge and skills in:

- Coding
- Computer-Aided Design Software

Industry Alignment

Students will be exposed to technologies and processes used in:

- Virtual Reality
- Programming
- Game Design



Curriculum Areas Covered

Year Level	Tech			Mathematics	Health & Physical Education	English		Arts					Humanities			Capabilities					
	Science	Design & Technologies	Digital Technologies			English	EAL	Dance	Drama	Media Arts	Music	Visual Arts	Visual Comm & Design	Civics & Citizenship	Economics & Business	Geography	History	Critical & Creative Thinking	Ethical	Intercultural	Personal & Social
7 & 8	■	■	■			■							■					■			■
9 & 10	■	■	■										■		■			■	■	■	■





FIND OUT MORE ONLINE:

yarrarangestechschool.vic.edu.au

GENERAL ENQUIRIES:

(03) 9286 9584

yrts-admin@boxhill.edu.au

Mon-Fri, 9:00am - 4:30pm

BOOKINGS:

(03) 9286 9584

yrts-bookings@boxhill.edu.au

Mon-Fri, 9:00am - 4:30pm

Box Hill Institute, Lilydale Lakeside Campus
Level 2, Building LB, 1 Jarlo Drive
Lilydale VIC 3140