



Mobile Tech School Program Offerings 2022



As we move into 2022, and the Gippsland Tech School expands into Wellington and East Gippsland shires, we are excited to release our program offerings for the year. These programs reflect the offerings developed with our partner schools over the previous years as well as new programs we believe will be important for students' futures. A huge amount of thanks goes to all the teachers who have helped us with this development. With the expansion in 2022 we will continue to increase our focus on providing the best learning experience possible for students in the programs we offer. If you are needing customisation within any of our offered programs, or have a suggestion for future program development, please contact our Mobile Tech School facilitator, Dr Warren Stannard: warren.stannard@gippslandtechschool.vic.edu.au



<p>Year 7 – 8</p>	<p>Everyday Maths Students will investigate everyday mathematical principles in a range of practical activities and partake in experiments of collecting and analysing data from everyday tasks.</p> <p>Life in Space This program will expose students to careers in Space Science and plant the seed for a future career in STEM. They explore how technology is influencing Space Science and Exploration, experience mixed realities to learn about the solar system and code robots to collect data in a Mars exploration simulation.</p> <p>Renewable Energy Students will be introduced to different types of renewable energy and investigate the advantages and disadvantages of each. They will conduct experiments using solar, wind, and hydrogen energy, expanding their knowledge of energy types and energy conversions.</p> <p>Sustainable Housing Students will investigate design features of energy efficient buildings and carry out experiments to determine the best materials to use and explore other energy saving practises.</p>
<p>Year 9 – 10</p>	<p>Everyday Maths Students will further develop and investigate everyday mathematical principles in a range of practical activities and partake in experiments of collecting and analysing data from everyday tasks.</p> <p>Renewable Energy Students will investigate the different types of renewable energy and investigate the advantages and disadvantages of each. They will conduct experiments using solar, wind, and hydrogen energy, expanding their knowledge of energy types and energy conversions.</p> <p>Sports Science Students will take part in movement analysis and see the different ways that technology is influencing training, from simple wearables to high tech motion analysis.</p> <p>Sustainable Housing Students will investigate design features of energy efficient buildings and carry out experiments to determine the best materials to use and explore other energy saving practises.</p>
<p>VCE</p>	<p>Physics This program explores topics in Physics for year 10 – VCE students.</p> <ol style="list-style-type: none"> 1. The wave nature of light: Students will conduct experiments, collect, and analyse data before recreating Thomas Young's famous double slit experiment. 2. Kinematics: Students will investigate the motion of a cart along an inclined track to gain an understanding of Newtons Laws and the relationship between parameters such as displacement, velocity, and acceleration.



Everyday Maths

INDUSTRY FOCUS AREA:	All
VICTORIAN CURRICULUM LINKS:	Mathematics, Personal & Social Capability, Critical & Creating Thinking, Design and Technologies, Music
TECHNOLOGY USED:	Jump mats, iPads – Physics Toolbox and Garage band software, Gravity carts, tracks, and accelerometers - software, Laser cutter and robots
YEAR LEVEL:	7 - 10
DURATION:	1 – 4 hours
CLASS SIZE	30

Introduction

Mathematics is not just an abstract activity but is present in everyday activities and is a useful tool to understand the world around us. Mathematics is everywhere – it can be used to analyse data, identify, and predict patterns, and is a vital tool in developing problem-solving skills. It is an indispensable tool in many professions – engineers and scientists could not operate without it; it is important for chefs, chemists, builders, accountants, and nearly every profession one could imagine.

Program Summary

Students will investigate mathematical principles in a range of practical activities. They will partake in experiments of collecting and analysing data. They will create mathematical models of real-world data and use these models to predict outcomes.

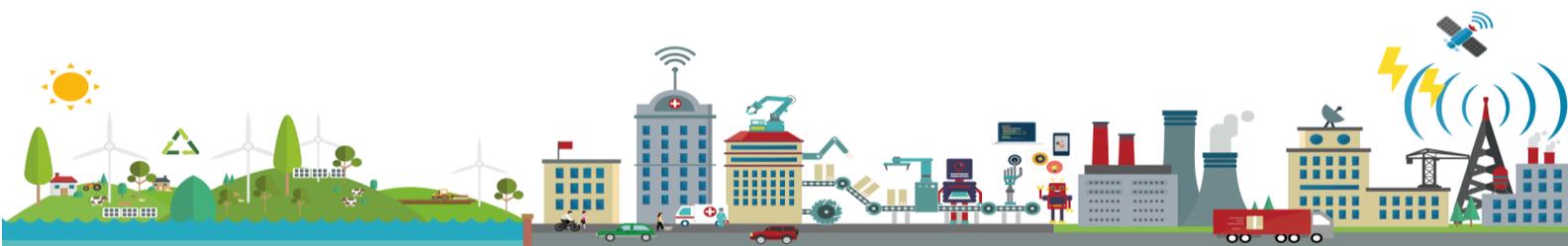
Activities will involve robots and autonomous vehicles, sports equipment, model cars on an inclined track, measuring temperature and heat loss, music scales and sound frequency, and laser cutting shapes and determining geometrical properties.

Taking part in this program, students will collaboratively:

- Use a jump mat to determine the relationship between time of flight and height jumped
- Use gravity carts to investigate relationships between distance and speed
- Use sound equipment to explore the relationship between notes in a musical scale and frequency
- Use the laser cutter and robotic vehicles to investigate geometric relationships

Career Links:

Artisans:	Machine operators, electricians, carpenters, chefs etc.
Designers:	Architects, draftspersons
Engineers:	Civil, construction, electrical, mechanical
Scientists:	Chemists, physicists, biologists, sports scientists, environmental scientists
Professionals:	Accountants, sports coaches, health care etc.



Life in Space

INDUSTRY FOCUS AREA:	Space Science, Engineering, Robotics.
VICTORIAN CURRICULUM LINKS:	Science, Digital Technologies, Personal and Social Capability, Critical and Creative Thinking
TECHNOLOGY USED:	Virtual reality, iPads and robots, and Maker Space materials.
YEAR LEVEL:	7 - 8
DURATION:	1 – 2 hours
CLASS SIZE	30

Introduction

“Space is for everybody. It’s not just for a few people in science or math, or for a select group of astronauts. That’s our new frontier out there, and it’s everybody’s business to know about space.”
–Christa McAuliffe [US Teacher & Astronaut]

Space inspires a sense of wonder and curiosity in people. Technology and advances in space exploration have allowed us to know more about what lies beyond Earth than ever before. Space-based technology supports many aspects of our daily lives, including communications, weather forecasts and GPS. This program will use Space as a platform to explore STEAM related topics and allow students to experience technologies being used in space exploration and research.

Program Summary

Students will experience virtual Space environments to learn about the unique position of Earth in the solar system and consider the use of mixed realities in learning about Space and training astronauts. Students will work together to code robots to navigate through a Mars simulation and design a habitat to consider the needs of humans living in Space for long periods. This program will expose students to careers in Space Science and plant the seed for a future career in STEM.

Taking part in this program, students will collaboratively:

- Students will use virtual reality to ‘experience Space’ and as a training tool for astronauts.
- Students will work together to code robots to navigate through a Mars simulation
- Students will design a habitat to consider the needs of humans living in Space for long periods.

Career Links:

Space Science, Engineering, Robotics, Computing, Space Medicine, Communications.



Renewable Energy

INDUSTRY FOCUS AREA:	New Energy, Advanced Manufacturing
VICTORIAN CURRICULUM LINKS:	Science, Digital Technologies, Personal & Social Capability, Critical & Creating Thinking
TECHNOLOGY USED:	Renewable energy kits – wind turbines and solar panels, Hydrogen electrolysis and fuel cell
YEAR LEVEL:	7 - 10
DURATION:	1 – 4 hours
CLASS SIZE	30

Introduction

Sustainability can be defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs. A key part of a sustainable future is building more resource efficient homes. Using good design principles can save energy, water, and money while creating a more enjoyable and comfortable home. There is also worldwide pressure to reduce CO₂ emissions and move towards renewable energy sources. The Victorian government has set a target of 25% renewable energy production by 2020, increasing to 40% by 2025¹. New industries are proposed for the Gippsland region including OSMI wind farms, solar farms, Star of the South offshore wind turbines, and the Marinus electricity link between Tasmania and Victoria.

Program Summary

Students will be introduced to a variety of different types of renewable energy. They will investigate the advantages and disadvantages of solar, wind, and hydrogen energy, conducting experiments with each energy type. Students will expand on their knowledge of energy types and energy conversions.

Taking part in this program, students will collaboratively:

- Conduct experiments to understand different types of renewable energy
- Conduct experiments investigating principles of energy conversion
- Use design thinking principles to design and carry out their own experiments
- Design, build, test and present a model town that is powered by renewable energy

Career Links:

Artisans:	Machinery operators, electricians, carpenters
Designers:	Architects, product testers, draftspersons
Engineers:	Civil, construction, electrical

<https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets>





Sports Science

INDUSTRY FOCUS AREA:	Sports Science, Exercise and Health sciences
VICTORIAN CURRICULUM LINKS:	Health and Physical Education, Digital Systems
TECHNOLOGY USED:	Jump mats, speed gates, motion analysis, virtual reality sets and iPads
YEAR LEVEL:	9 - 10
DURATION:	1 – 4 hours
CLASS SIZE	30

Introduction

The impact of advancing technology and innovation is changing how we train and play sport. In this program, students will explore how science and technology are impacting the sports and fitness industries. Through hands on activities, students will experience new ways to exercise and assess performance and understand the impact of new and developing technology on sport and exercise.

Program Summary

Students will explore how science and technology are impacting the sports and fitness industries. Through hands on activities, students will experience new ways to exercise and assess performance and understand the impact of new and developing technology on sport and exercise. This program is designed as an introduction to new technologies relating to sport and exercise, and to increase awareness of careers in Sports Science.

Taking part in this program, students will collaboratively:

- Students will use sensors to assess speed and jump height
- Test cardiorespiratory fitness using clinical VO2 max testing equipment
- Experience motion capture technology with the Xsens suit
- Complete a workout in virtual reality

Career Links:

Health Professionals, Sports Scientists, Exercise Professionals, Data Analysts, Sport Technologists.



Sustainable Housing

INDUSTRY FOCUS AREA:	New Energy, Advanced Manufacturing
VICTORIAN CURRICULUM LINKS:	Science, Digital Technologies, Personal & Social Capability, Critical & Creating Thinking
TECHNOLOGY USED:	Infra-red thermal imaging cameras, STELR sustainable housing kits, iPads, and Maker Space materials including model house kits
YEAR LEVEL:	7 – 10
DURATION:	1 – 4 hours
CLASS SIZE	30

Introduction

The face of energy in the Gippsland region is undergoing change. This has been seen with the closure of the Hazelwood Power Station and the increase in solar, wind, and geothermal energy generation. There is a world-wide pressure to reduce emissions and move towards a greener future. Household energy use is a significant contributor to global carbon emissions. International policy is firmly moving towards technology-rich, low- and near-zero-energy homes. That is, buildings designed to reduce the need for additional heating, cooling and lighting. They use efficient or renewable energy technology to reduce the remaining energy use. The Victorian government has set a target of 25% renewable energy production by 2020, increasing to 40% by 2025¹.

Program Summary

Students will look at energy efficient building design. They will be introduced to principles of heat flow and energy conversion. They will investigate the insulation properties of various building materials and the use of different glazing treatments. They will design and build a model house.

Taking part in this program, students will collaboratively:

- Conduct experiments in glazing treatments
- Conduct experiments with insulating materials
- Design and build a model of an energy efficient house

Career Links:

Artisans: Builders, electricians, carpenters,
Designers: Architects, interior designers, draftspersons, civil engineers

¹ <https://www.energy.vic.gov.au/renewable-energy/victorias-renewable-energy-targets>



Physics

INDUSTRY FOCUS AREA:	All
VICTORIAN CURRICULUM LINKS:	VCE Physics, Specialist Maths
TECHNOLOGY USED:	Waves on a wire kit, lasers, optics kits, gravity carts and tracks, iPads and associated software
YEAR LEVEL:	10 - VCE
DURATION:	1 – 4 hours
CLASS SIZE	20

Introduction

What is light? This question has baffled physicists and scientists for hundreds of years. In the 19th century light was described as a wave travelling through a medium. Thomas Young's famous double slit experiment provided strong confirmation of the wave model of light. In 1905 Einstein proposed that light consisted of small quanta of energy, later named photons. These two seemingly incompatible models are still used to describe the various characteristics of light and is often referred to as wave/particle duality.

Program Summary

In this program, students will investigate one of the following:

What is Light?

Students will investigate the properties of waves on a string. They will take measurements and create standing waves in a wire, modifying the arrangement to produce various harmonic oscillations. Students will then re-create Young's experiment and determine the width of a single hair by measuring the separation of lines in an interference pattern.

Kinematics

Students will investigate the motion of a cart along an inclined track to gain an understanding of Newtons Laws and the relationship between parameters such as displacement, velocity, and acceleration.

Taking part in this program, students will collaboratively:

- Conduct experiments and collect data
- Analyse and graph real world data
- Create models to describe observed phenomena
- Reflect on learning

Career Links:

Engineers: Civil, construction, electrical, mechanical
Scientists: Chemists, physicists, biologists, sports scientists, environmental scientists, medical scientists

