



# STEM and STEAM

*at Woodcroft College*



CRICOS NO: 01645K





## STEM and STEAM

### What are STEM and STEAM?

As advances in technology impact further on our everyday lives, we need to understand more about Science, Technology, Engineering and Mathematics.

**STEM** (Science, Technology, Engineering and Mathematics) programs in schools help students to gain that understanding.

STEM-based learning experiences relate scientific concepts to real-life situations.

STEM-based learning experiences allow students to make connections across disciplines rather than learning about subjects in isolation.

Students connect with and engage in learning experiences through exploration.

We know that the innovators, educators, leaders and learners of C21 will require not only the knowledge, skills and abilities of STEM, but also creativity, inquiry, wonder and innovation.

**STEAM** is an approach to learning that take the benefits of STEM and integrates them through the Arts.

Science, Technology, Engineering, the Arts and Mathematics help to guide students' inquiry, dialogue and critical thinking.

Students not only engage in STEM-based learning experiences, but they take thoughtful risks, persist in problem-solving, embrace collaboration, and work through creative processes.

STEAM encourages and help students to become active questioners, scientific inquirers, and skilled investigators.

# STEM and STEAM at Woodcroft

## Junior School

Scientist in Residence Dr Leone Shapter

Students gain confidence in STEAM in the primary and middle years.

Quality teaching is the key.

In the Junior School Dr Leone Shapter is at the heart of delivering the science curriculum to students aged 6 to 11. Her innovative and imaginative STEAM program includes:

- Science clubs
- Junior primary and primary-aged hands-on science investigations, involving skills-based approaches to laboratory work
- Robotics
- Environmental biodiversity and sustainability through exploration: the Native Butterfly Garden and Nature Trail
- Collaboration with teachers, embedding scientific learning and understanding into the IBPYP Units of Inquiry.



## Middle and Senior School

Students gain knowledge and skills in STEAM through the study of Science, Mathematics, Technology, and Advanced Technology.

Often the subjects are combined and taught as interdisciplinary units (IDUs), enabling students to make connections through and across the learning areas.

Examples of IDUs include:

- Year 6: Story-making: Inanimate Alice (English, Art and Music). Students create a story-line, add visuals, and set the story and images to music
- Year 7: Water Use (Humanities)
- Year 8: Creating an iPad Cover (Art and Design)
- Year 9/ 10: Inspiring Women Engineering Challenge, Flinders University
- Year 10: Climate Change (Mathematics and Science)
- Year 10: STEM@Flinders University. Students attend workshops in Science, Mathematics and Coding. They engage with tertiary students of Science, Engineering, Mathematics and Computer Science
- Year 10 STEM@Woodcroft College. Students rotate through workshops focussed on Robotics, Climate Change and Finance
- Year 10 Advanced Technology. Students learn about Robotics, Coding, Computer Design and Advanced Manufacturing Techniques, putting their skills to the test in solving real-world problems
- Year 10 Extended Mathematics
- Year 11: INGENUITY (Mathematics), Adelaide University
- Year 11 IB Diploma. Students take part in a 'Group 4 day' (the Group 4 project is an IB requirement). They design practical activities with a theme encompassing all the scientific disciplines, then spend the day in groups performing the experiments.



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