

STEM - SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS

WHAT IS STEM?

STEM stands for Science, Technology, Engineering and Mathematics. STEM is everywhere and it touches all aspects of our lives. Our health, safety, relationships with family and friends and even our jobs are shaped by the innovation in technology that we discover in science. Economies are built around new technologies that help to find new and better ways of doing things. STEM skills are becoming increasingly important in the workforce as employers are aiming to recruit technicians and trade workers with STEM skills.

WHY STUDY STEM?

How do you prepare young people for future jobs that don't exist yet? How many jobs currently available will be automated within the next 5 years? Are the skills learnt more important than the knowledge?

The "Foundation for young Australians" analysed over 4.2 million online jobs during the 2012-2015 period and found that the demand for "Enterprise Skills" are on the rise. Skills such as: problem solving, communications, critical thinking, creativity, teamwork presentation skills and digital and financial literacy.

Our goal at Narre Warren South P-12 College is help develop these key skills in our STEM program. We want to ensure our students finish school with a strong foundation in STEM related skills. To not only learn the skills that come from the understanding of STEM subjects but to think and relate those skills to society.

WHAT JOBS IS A STEM BACKGROUND USEFUL FOR?

All jobs can be categorised into 7 clusters in Australia. But these clusters are not separate at all, in fact they are connected by similar skills that are transferable. Any job no matter what the field of study will have some relationship to another through the skills that both employ.

For example, an engineer would require skills in problem solving, mathematics, technical drawings, planning and management of projects. These are some of the skills that an architect or project manager requires.



STEM AT NARRE WARREN SOUTH P-12 COLLEGE

The STEM program will start from Year 7 where students will work on developing enterprising skills. Each term there will be a single major project that will be undertaken. This project will encourage the students to solve authentic problems and work together in teams to build real solutions. But the process doesn't stop there, over the course of the project students will be required to refine and critique their own work as well as their classmates.

In Year 7 Maths, students will apply their number and algebra skills to conduct investigations, solve problems and communicate their reasoning, understand the practical relevance between measurement and geometry and recognise and analyse statistics and probability. In Year 7 Science, students will understand Science as a human endeavour and enquiry skill. They will cover areas of study in living things and their interdependence, composition and behaviour of substances, Earth's dynamic structure and its place in the cosmos and understanding the force and motion of matter and energy. The Year 7 STEM program will be based on the Year 7 curriculum, it provides students the opportunity to extend their learning and understanding. The course will be project based and students will spend 2 periods a week designing, investigating and analysing information gathered. Project based learning is not just a way of learning; it's a way of learning to learn. If students learn to take responsibility for their own learning, they will form the basis for the way they will work with others in their adult lives. Part of this teamwork building helps introduce students to the concept of delegation that are extremely prominent in the real world.

In STEM the skills and knowledge obtained will be applied to solve mathematical equations and analyse and interpret data obtained from experimentation. Experiments such as investigating catapults and the projectile motion and parabolic equations of projectiles. Students will be able to verify the kinematic equations with real life data. Not all project based work will be practical. Some will be research projects such as researching on famous scientific discoveries. Students will need to look at the methodology, the techniques and evidence the scientists drew upon, and the thinking that their work challenged. Different types of evidence and investigation will be apparent, depending upon the study. This is intended for students to appreciate the complexity behind the scientific process, and the importance of communication in science.

Some projects will be presented orally in front of the class to develop the communication and presentation skills. Oral Presentation is one of the best platforms where non-verbal cues are combined with effective verbal skills. It allows the students to present their thoughts and views confidently in-front of a live audience and build confidence. Each student will benefit from the feedback from not just the teacher but from the entire class. To verbalise their findings and how they reached their conclusion gives the rest of the class the opportunity to incorporate what others are doing into what they are currently doing.