

STEM - SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS

Are you interested in Science, Technology, Engineering or Mathematics? Do you want to be an engineer, computer programmer, project manager or scientist? Do you know how your smart phone works, or how we are able to explore our world and outer space from the inside of your home?

WHAT IS STEM?

STEM - which stands for Science, Technology, Engineering and Mathematics, 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?

The success of VCE maths and science subjects such as Physics, Chemistry, Maths Methods and Specialist maths are often developed from an earlier age. The STEM program aims to provide students with the knowledge and understanding of these 4 disciplines. Knowledge that can turn into innovation; innovation that becomes influence. We at Narre Warren South P-12 College are providing this opportunity to students that have a keen interest in the maths and science subjects to expand their horizon.

Our goal at Narre Warren South P-12 College is to lift the foundational skills in STEM learning areas and cross disciplinary areas, develop mathematical, scientific and technological literacy and promote skills in problem solving, critical analysis and creative thinking. We want to ensure students finish school with a strong foundation in STEM related skills; to not only learn the skills but to think and relate those skills to society.

WHAT JOBS CAN HAVING A STEM BACKGROUND BE USEFUL FOR?

- Professional, Scientific and Technical Services was the most common industry for Science and IT
- Those with qualifications in Mathematics were most likely to be employed in Education and Training
- Manufacturing was the top industry for Engineering qualification holders
- Individuals with Agriculture and Environmental Science qualifications were most commonly employed in the Agriculture, Forestry and Fishing industry



STEM AT NARRE WARREN SOUTH P-12 COLLEGE

The STEM program will start from Year 7 where students will work on developing skills in problem solving, analysis and interpretation of data, as well as enhancing their own skills to help them in their future careers. Each term there will be up to two major projects that will be undertaken. These projects will encourage the students to solve authentic problems and work together in teams or even as a class to build real solutions.

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 apply enquiry skills. 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 and expand 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 working together. If students learn to take responsibility for their own learning, this 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. This concept is 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 will be investigated. 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 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. This 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 their peers; 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 themselves are currently doing.