

# Engineering Studies

The following contains a description of the course we offer to students at St Marys Senior High. It is intended as a guide to help you select your subjects and you should read it carefully.

Please note:

- The details given represent the way that the course is delivered at St Marys Senior High and may involve different choices from the way other schools might operate the same course.
- Classes can only be formed where sufficient students select the particular course. The fact that a course is listed here is not a commitment to run the course in a particular year.
- The arrangements for particular courses are subject to change for a variety of reasons.

## Engineering Studies - Course Details

Units	Type	ATAR	Faculty Teaching This Course
2	Board Developed Course – Examinable at the HSC, marks can be used to count towards an ATAR	A – Counts towards an ATAR with no restrictions	TAS/PDHPE

### ***What will I be doing in this course?***

The Engineering Studies course focuses on the development and application of mathematical, scientific and technological skills and their integration with business and management. Students will develop the skills, knowledge and understanding associated with a study of engineering, its practices and associated methodologies. The course promotes environmental, economic and global awareness, problem-solving ability, and engagement with information technology, self-directed learning, communication, management and skills in working as a team.

Preliminary Course:

- Engineering fundamentals - historical developments of engineering, simple machines, basic forming processes suitable for materials, composites, freehand sketching in three-dimensional and third angle orthogonal projection.
- Engineered products - forces, modification of materials, simple circuits and components, Australian Standard (AS 1100), developing an Engineering Report.
- Braking systems – historical developments of braking systems including band, drum, disc, ABS, regenerative brake systems, stress and strain, fluid mechanics, computer-aided drawing (CAD).
- Biomedical engineering – the effect of biomedical engineering on people’s lives, structure and properties of appropriate materials, digital technology, sectioning of orthogonal drawings.

HSC Course:

- Civil structures – historical developments of civil structures, truss analysis, testing of materials, concrete (reinforced, pre – and post – tensioned), Engineering Report writing.
- Personal and public transport – static friction, heat treatment of ferrous metals, ceramics and glasses, control technology, collaborative work practices.
- Aeronautical engineering – historical developments in aeronautical engineering, fundamental flight mechanics, propulsion systems, composites, graphical mechanics.
- Telecommunications engineering – copper and its alloys, semiconductors, radio transmission, digital television transmission, satellite communication systems.

***What should I be able to do at the end of the course?***

Students will develop:

- Understanding of the scope of engineering and the role of the engineer.
- Knowledge and understanding of engineering principles and an appreciation of the responsibilities of engineers in society.
- Communication skills appropriate to engineering practices.
- Knowledge and understanding of developments in technology and an appreciation of their influence on people and engineering practice.
- Management and problem-solving skills in engineering contexts.
- Skills in the application of engineering methodology.

***How will this course help me in the future?***

Students who study Engineering Studies will be able to develop skills that are transferable to most industries such as problem solving, decision making, innovation, project management, team working and communication.

For those following a pathway of further study, university courses could be in the areas of aeronautics, bioengineering, chemical engineering, civil and environmental engineering, design engineering, electrical and electronic engineering, mechanical engineering, computing, mechatronics engineering and renewable energy engineering.

After further study in engineering, it could lead to careers in electronics, engineering management, industrial design, telecommunications, power generation and distribution, renewable energy, construction, mining resources, aeronautical, aerospace, water resource management, manufacturing, railroad and ship building.