Engineering Studies A/T

About Engineering Studies

Engineering Studies introduces students to engineering principles and systems, and is based on finding solutions to real-world problems. In this interdisciplinary course, students apply engineering processes, understand underpinning scientific and mathematical principles, develop engineering technology skills and explore the interrelationships between engineering and society. They rely strongly on their creativity, critical thinking and problem solving skills to turn ideas into reality and to develop solutions to problems.

The course focuses on understanding the engineering design process, to develop products, systems and processes. Students are required to undertake a variety of engineering design challenges which include activities such as testing of materials, formulation of problems, analysis of engineering solutions, modelling solutions and prototyping. Engineering Studies equips students with the skills and knowledge to make positive contributions to the future of societies and the environment. The course promotes the importance of being socially responsible and conscious of global community issues that may impact on the environment and sustainable management of resources.

Course Patterns

The course is structured non-sequentially for either major or minor study.
There is flexibility to study a Negotiated Unit in addition to other units.
At least two other units must be completed before undertaking Negotiated Unit.

What jobs can Engineering Studies lead to?

- Engineering
- Industrial Design
- Graphic Design
- Digital 3D modelling
- Cyber Security

Units

All units described below are semester length (value 1.0).

Engineering Systems

This unit focuses on engineering systems and how multiple components operate and interact, to serve a single function as a solution. Students learn about the broader context of an engineering solution taking a holistic view. Students explore user needs, including user needs analysis and requirements, and breaking design problems and solutions into smaller parts. They create design solutions using scientific concepts, mathematical tools and computer-based simulations.

Engineering Processes & Concepts

Students learn about engineering design processes and concepts, and how they are used to develop and optimise solutions to problems, with reference to sustainability, cost and the life cycle of an engineered solution. They explore and investigate existing products, materials and components in response to a design brief. Students design and create working models or prototypes of their solutions.

Applied Engineering

In this unit, students learn how engineering design processes, including project management, are applied to solve existing problems. They explore real world problems of increasing complexity requiring project-based solutions. Students use guidelines and a context to apply knowledge of the engineering process and theory, to develop and respond to design briefs.

Future Challenges & Innovations

In this unit, students learn about emerging societal, global and environmental challenges, and the potential for innovative engineering and emerging technological solutions. They explore and research future global challenges. Students research and understand the implications, ethical and otherwise for new innovations to develop novel engineering solutions to these challenges.

Independent Study

In this unit, qualified students will study an area of special interest to be decided upon by a class, group(s), or an individual student in consultation with the teacher and with the Principal's approval.