

Engineering Studies (General)

The Engineering Studies General course is essentially a practical course focusing on real-life contexts. Students apply a design process to research and present information about materials, engineering principles, concepts and ideas, and design proposals.

Students develop their engineering technology skills in planning and implementing a process to manipulate tools and machines to produce a prototype of their designed solution.

Technologies

Courses

Course Structure

Year 11

Unit 1

- In this unit, students develop an understanding of the engineering design process. They study and interpret a given design brief, learn a range of research skills and devising methods to develop concepts, then plan and communicate proposed solutions to the given design brief.
- They study core engineering theory and relevant theory of their chosen specialist area, and learn to integrate and use this knowledge to develop and present proposals for practical solutions.
- Students calculate requirements, prepare drawings and produce lists of materials and components and then follow a given timeline to produce, test and evaluate the finished product.

Unit 2

- In this unit, students focus on the topics of automation and technical innovation. They investigate engineering examples within these themes and the impact these technologies have on society.
- Students study and interpret a given design brief. They develop responses to the brief through a process that requires students to engage in a range of activities including: researching similar existing engineered products; sketching, drawing and annotating concepts; and choosing the preferred concept for production as a prototype or working model.
- Students finalise their chosen design by documenting its specifications in the form of appropriate drawings and lists of materials and components. They follow a given timeline to undertake tasks required to produce, test and evaluate the product.
- Core and specialist area theory continues to be studied to develop greater understanding of the scientific, mathematical and technical concepts that explain how engineered products function.

Technologies

Courses

Year 12

Unit 3

- In the development of an engineering project, students study core engineering theory and theory in their chosen specialist area.
- They develop an understanding of the different forms of energy, uses of these different forms and sources of renewable and non-renewable energy.
- In this unit, students also develop a greater understanding of the engineering design process and learn and apply more complex theory and understanding to a student developed design brief.
- Given guidelines and a context, students develop and respond to the design brief through a process that requires them to investigate existing products, construction materials and components.
- Design ideas are developed through annotated sketches and concept drawings. Students select and analyse the most suitable concept for production as a prototype or working model.
- Students finalise their chosen design by documenting its specifications in the form of appropriate orthographic drawings and lists of materials and components. They calculate the cost of the prototype or model. They follow a given timeline to undertake tasks required to produce, test and evaluate the product.

Unit 4

- In this unit, students develop their understanding of core and specialist area theory to better understand the scientific, mathematical and technical concepts that explain how engineered products function.
- They study the impact of the different forms of obsolescence in engineering products, on society, business and the environment.
- Students refine their understanding of the engineering design process. They develop a design brief, and respond to the brief, through a process that requires them to engage in a range of activities, and investigate construction constraints, materials and components.
- Design ideas are developed through annotated sketches and concept drawings. Students select and analyse the most suitable concept for production as a prototype or working model.