

Year 12 Materials Design and Technology: Metal (General)

Materials are the basic ingredients of technology. Materials are used to make machines and these machines use materials to make products. Materials also supply the energy to enable technology to function. Throughout history, the evolution of technology has been largely determined by the availability of materials. The strong historical links between materials, design and technology remain significant in society today. As long as the desire to create new opportunities and to continue to improve our quality of life remains, the development of materials will continue. The Materials Design and Technology General course is a practical course. The course allows teachers the choice to explore and use three materials learning contexts: metal, textiles and wood with the design and manufacture of products as the major focus. There is also the flexibility to incorporate additional materials from outside the designated contexts. This will enhance and complement the knowledge and skills developed within the course as many modern-day products are manufactured using a range of different material types. Students examine social and cultural values and the short-term and long-term impacts of the use and misuse of materials and associated technologies. Through this inquiry, experimentation and research, students develop their creativity and understanding of the society in which they live. Working with materials, students develop a range of manipulation, processing, manufacturing and organisational skills. When designing with materials, they develop cognitive skills, such as solving problems, generating ideas, creative design strategies and communicating what they do. This makes them more technologically literate and as consumers, enables them to make more informed decisions about the use and misuse of technology. The course outcomes are relevant to a number of learning areas, including but not limited to, Technology and Enterprise, Society and Environment, The Arts, Science and Mathematics. This course also connects to the world of work, further vocational education and training and university pathways. Students may achieve vocational education and training (VET) competencies as they complete their design projects, while at the same time developing cognitive skills fundamental to designing in a practical context. This process enhances employability and may lead to further training and employment opportunities in areas that include textiles and clothing, manufacturing, design, built environment, science and engineering. The Materials Design and Technology General course aims to prepare all students for a future in a technological and material world by providing the foundation for lifelong learning about how products are designed and how materials are developed and used.

Prerequisites:

There are no prerequisites however previous success in Year 11 Materials Design & Technology: Metal (General) is advantageous.

Structure of the syllabus

The Year 12 syllabus is divided into two units which are delivered as a pair. The notional time for the pair of units is 110 class contact hours.

Unit 3

Students develop an understanding of the elements and fundamentals of design and consider human factors involved in the design, production and use of their projects. They develop creative thinking strategies and work on design projects within specified constraints. Students learn about

the classification and properties of a variety of materials and make appropriate materials selection for design needs.

Students learn about manufacturing and production skills and techniques. They develop the skills and techniques appropriate to the materials being used and gain practice in planning and managing processes through the production of design project. They learn about risk management and ongoing evaluation processes.

Unit 4

Students learn about the nature of designing for a client, target audience or market. Students apply an understanding of the elements and fundamentals of design and consider human factors involved in their design projects. Students learn about the nature, properties and environmental impacts related to a variety of materials and production techniques. They develop creative thinking strategies, work on design projects within specified constraints and consider the environmental impacts of recycling of materials.

Students extend their understanding of safe working practices and contemporary manufacturing techniques and develop the knowledge, understanding and skills required to manage the processes of designing and manufacturing.

Assessments:

Design (Practical Portfolio): 25%

Production (Practical): 50%

Response (Written): 10%

Externally Set Task: 15%

Pathways:

The Materials Design and Technology General course aims to prepare all students for a future in a technological and material world by providing the foundation for lifelong learning about how products are designed and how materials are developed and used. This course focuses on those areas of the technological world that utilise ferrous and non-ferrous metals.

More Information:

For further information regarding this course [click here](#).