# Product Design and Technology – Materials, Wood and Textiles



# **Course Description**

Product design is a solution-focused approach that engages with the diverse needs and opportunities of individuals, society and the environment in which we live. Product designers aim to improve welfare, which includes quality of life, by designing innovative and ethical solutions. Product design is enhanced through knowledge of social, technological, economic, historical, ethical, legal, environmental and cultural factors. These factors influence the form, function and aesthetics of products.

Central to VCE Product Design and Technologies is a design process that encourages divergent and convergent thinking while engaging with a problem. The design brief identifies a real need or opportunity and provides scope for designing, making and evaluating. Investigation and research inform and aid the development of designed solutions that take the form of physical, three-dimensional products.

In VCE Product Design and Technologies students are designer-makers who design solutions that are innovative and ethical. As designer-makers, they learn about the design industry, teamwork and the collaborative nature of teams, entrepreneurial activities, innovative technologies and enterprise. The development of designed solutions requires speculative, critical and creative thinking, problem-solving, numeracy, literacy, and technacy. Students participate in problem-based design approaches that trial, test, evaluate, critique and iterate product solutions. Students prototype and test using a variety of materials, tools and processes.

Knowledge and use of technological resources are integral to product design. Designers safely and sustainably transform materials into products using a range of materials, tools and processes. In this study, students gain an understanding of both traditional and new and emerging materials, tools and processes. They study and experience a variety of design specialisations and use a range of materials, tools and processes as they demonstrate technacy.

# **Course Structure**

## Unit 1 – Design practices

This unit focuses on the work of designers across relevant specialisations in product design. Students explore how designers collaborate and work in teams; they consider the processes that designers use to conduct research and the techniques they employ to generate ideas and design products. In doing this, they practise using their critical, creative and speculative thinking strategies. When creating their own designs, students use appropriate drawing systems – both manual and digital – to develop graphical product concepts. They also experiment with materials, tools and processes to prototype and propose physical product concepts. In this unit, students analyse and evaluate existing products and current technological innovations in product design. They achieve this through understanding the importance of a design brief, learning about factors that influence design, and using the Double Diamond design approach as a framework. In their practical work, students explore and test materials, tools and processes available to them in order to work technologically, and they practise safe skill development when creating an innovative product.

## Area of Study

- 1. Developing and conceptualising designs
- 2. Generating designing and producing

#### Unit 2 – Positive impacts for end users

As designers students will look outward, both locally and globally, to research the diverse needs of end users. They should explore how inclusive product design solutions can support belonging, access, usability and equity. In this unit, students specifically examine social and/or physical influences on design. They formulate a profile of an end user(s), research and explore the specific needs or opportunities of the end user(s) and make an inclusive product that has a positive impact on belonging, access, usability and/or equity. Students also explore cultural influences on design. They develop an awareness of how Aboriginal and Torres Strait Islander peoples design and produce products, how sustainable design practices care for Country, and how traditions and culture are acknowledged in contemporary designs. Students also have opportunities to make connections to personal or other cultural heritages.

#### Area of Study

- 1. Opportunities for positive impacts for end users
- 2. Designing for positive impacts for end users
- 3. Cultural influences on design

#### Unit 3 – Ethical product design and development

In this unit students research a real personal, local or global need or opportunity with explicit links to ethical considerations. They conduct research to generate product concepts and a final proof of concept for a product solution that addresses the need(s) or opportunities of the end user(s).

Product designers respond to current and future social, economic, environmental or other ethical considerations. This unit focuses on the analysis of available materials in relation to sustainable practices, tensions between manufacturing and production, modern industrial and commercial practices, and the lifecycles of products from sustainability or worldview perspectives.

Students plan to develop an ethical product through a problem-based design approach, starting with a need or opportunity and using a design process and testing to problem-solve. The design brief, product concepts and the final proof of concept are developed through the Double Diamond design approach, using design thinking. Students undertake the role of a designer to generate, analyse and critique product concepts, with the chosen product concept becoming the final proof of concept. Throughout a design process, the product concepts and the final proof of concept are evaluated using relevant factors that influence product design, and shaped using design thinking.

#### Area of Study

- 1. Influences on design, development and production of products
- 2. Investigating opportunities for ethical design and production
- 3. Developing a final proof of concept for ethical production

## Unit 4 – Production and evaluation of ethical designs

In this unit students continue to work as designers throughout the production process. They observe safe work practices in their chosen design specialisations by refining their production skills using a range of materials, tools and processes. Students collect, analyse, interpret and present data, use ethical research methods and engage with end user(s) to gain feedback and apply their research and findings to the production of their designed solution. Students also focus on how speculative design thinking can encourage research, product development and entrepreneurial activity through the investigation and analysis of examples of current, emerging and future technologies and market trends.

#### Area of Study

- 1. Managing production for ethical designs
- 2. Evaluation and speculative design

# **Entry and Recommendations**

There are no prerequisites for entry to Units 1, 2 & 3. Students must complete Unit 3 prior to Unit 4.

# Assessment

## Satisfactory Completion

Demonstration of achievement of outcomes and satisfactory completion of a unit are determined by evidence gained through the assessment of a range of learning activities and tasks.

### Level of Achievement

#### Unit 1 and 2

- Coursework Unit 1
  - a multimodal record of evidence of research, development and conceptualisation of products as well as a reflection on collaboration, teamwork and ways to improve in the future
  - practical work: a demonstration of graphical and physical product concepts including prototyping and making final proof of concept along with a finished product.
  - Examination
- Coursework Unit 2
  - multimodal record of evidence of research, development and conceptualisation of products addressing a need or opportunity related to positive impacts for the end user(s)
  - practical work: demonstration of graphical and physical product concepts including prototyping and making final proof of concept along with the finished product addressing a need or opportunity related to positive impacts for the end user(s)
  - case study analysis or research inquiry of a designer and end user(s) that explores the influence of culture in product design
  - $\circ$  Examination

#### Unit 3 and 4

- Coursework Unit 3
  - o case study analysis
  - o research inquiry
  - o data analysis
  - o oral presentation using multimedia: face-to-face or recorded as a video or podcast
  - o product analysis
- School assessed task Unit 3 and 4

multimodal record of evidence that records:

- formulation of a design brief and gathering evidence of research that explores market needs or opportunities
- $\circ$   $\,$  generation, design and evaluation of product concepts  $\,$
- o justification of final proof of concept
- scheduled production plan, including progress during the production process and decisions and modifications made to the scheduled production plan

practical work that demonstrates:

- use of technologies to develop physical product concepts including prototypes and finished product
- management of time and other resources effectively and efficiently to safely make the product designed in Unit 3
- Assessment Unit 3 and Unit 4
  - $_{\odot}$  School assessed taskwork (SAT) 50% of the study score.
  - $_{\odot}$   $\,$  School assessed coursework (SACs) 20% of the study score.
  - Examination (30%) of the study score.