

# **Design and Technology**

## **Stage 6 Syllabus**

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# **1 The Higher School Certificate Program of Study**

The purpose of the Higher School Certificate program of study is to:

- provide a curriculum structure which encourages students to complete secondary education
- foster the intellectual, social and moral development of students, in particular developing their:
  - knowledge, skills, understanding and attitudes in the fields of study they choose
  - capacity to manage their own learning
  - desire to continue learning in formal or informal settings after school
  - capacity to work collaboratively
  - respect for the cultural diversity of Australian society
- provide a flexible structure within which students can prepare for:
  - further education and training
  - employment
  - full and active participation as citizens
- provide formal assessment and certification of students' achievements
- provide a context within which schools also have the opportunity to foster student's physical and spiritual development.

## **2 Rationale for Design and Technology in the Stage 6 Curriculum**

From the earliest times, humans have interpreted, shaped and altered their environments in an attempt to improve the quality of their lives. In the process, technologies have evolved and been developed to the extent that, today, they have an impact on most aspects of our daily lives.

Australia needs business, industry and community leaders who understand the nature of design and technology; who will foster and promote innovation and the creative use of technologies; and who appreciate how design and technological activity contribute to the lives of individuals and to cultures and environments.

The issue of sustainable development is of concern to individuals, communities and governments as increasing evidence of the depletion of our natural resources through technological activity emerges.

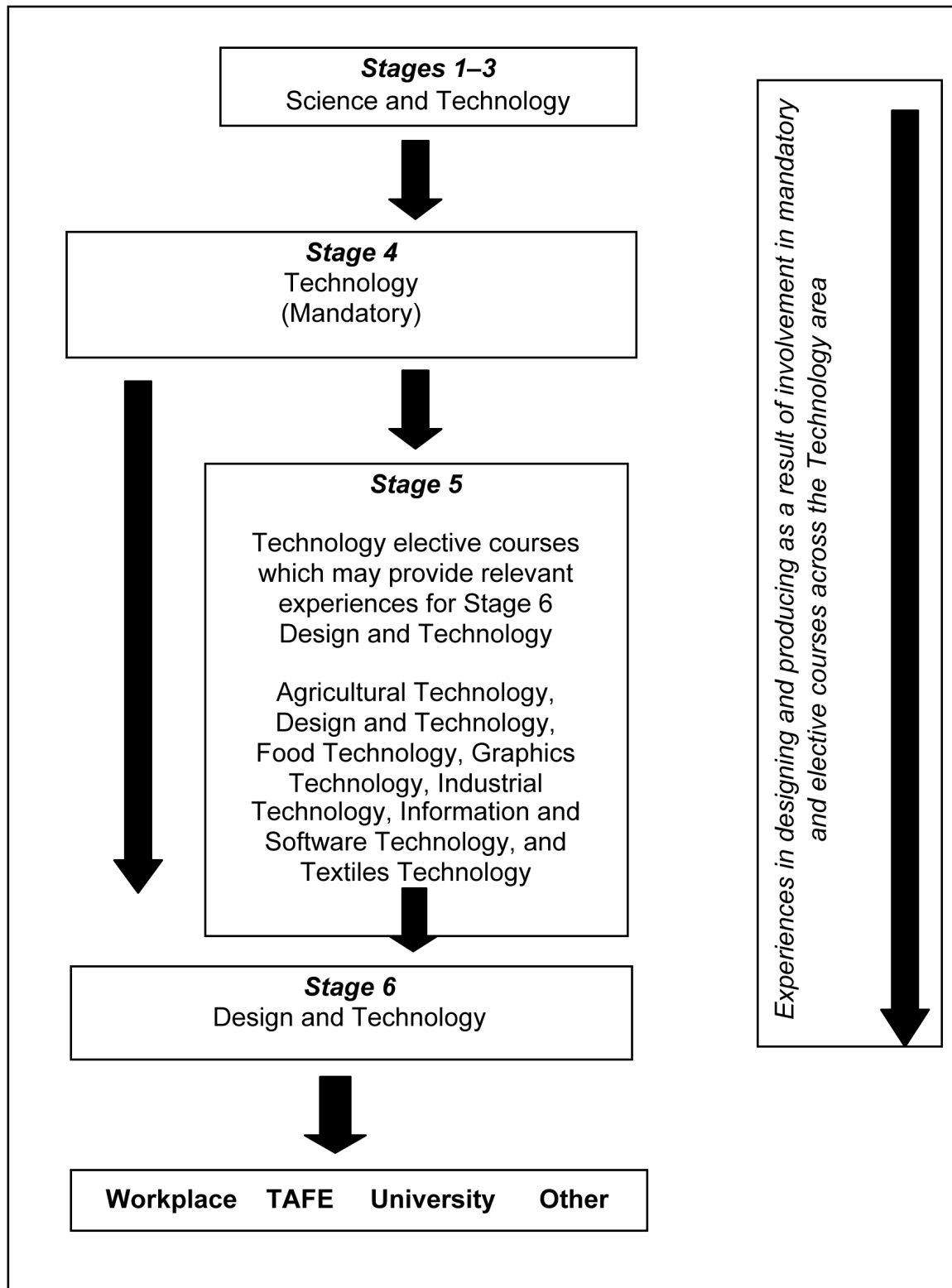
The study of Design and Technology Stage 6 develops conceptual understanding and enables students to creatively apply these to specific technological endeavours through design projects. It also seeks to develop students' appreciation of the historical and cultural influences on design and the interrelationships of design, technology, society and the environment.

Design and Technology has a unique focus on creativity, innovation and the successful implementation of innovative ideas. Students will investigate the importance of evaluation, the role of computer-based technologies, management, communication and collaborative design, as well as exploring current and emerging technologies. Through the completion of quality design projects, students are provided with the opportunity to develop specific production and manufacturing skills.

Design and Technology is inclusive of the needs, interests and aspirations of all students. It provides opportunities for students to develop design projects in areas of individual interest, to discuss equity issues related to design, production and manufacturing in the Australian society and to consider careers in the fields of design and manufacturing.

Students will be given the opportunity to explore and develop technologies and demonstrate insight into the future uses of technology. They will articulate arguments on issues and consequences including environmental and social impacts. They will develop skills that are transferable and which lead to lifelong learning.

### 3 Continuum of Learning for Design and Technology Stage 6 Students



## **4 Aim**

Design and Technology Stage 6 is designed to develop students' confidence, competence and responsibility in designing, producing and evaluating to meet both needs and opportunities, and to understand the factors that contribute to successful design and production.

## **5 Objectives**

Students will develop:

1. knowledge and understanding about design theory and design processes in a range of contexts;
2. knowledge, understanding and appreciation of the interrelationship of design, technology, society and the environment;
3. creativity and an understanding of innovation and entrepreneurial activity in a range of contexts;
4. skills in the application of design processes to design, produce and evaluate quality design projects that satisfy identified needs and opportunities;
5. skills in research, communication and management in design and production;
6. knowledge and understanding about current and emerging technologies in a variety of settings.



## 6 Course Structure

<b>Preliminary Course</b> <b>120 indicative hours</b>	<b>HSC Course</b> <b>120 indicative hours</b>
<p><i>Each of the content areas should be introduced and given appropriate emphasis through teaching and learning activities and a minimum of two design projects.</i></p> <p><b>Designing and Producing</b></p> <p>The study of:</p> <ul style="list-style-type: none"> <li>• design theory and practice</li> <li>• design processes</li> <li>• factors affecting designing and producing</li> <li>• design and production processes in domestic, community, industrial and commercial settings</li> <li>• technologies in industrial and commercial settings</li> <li>• environmental and social issues</li> <li>• creative approaches to design</li> <li>• collaborative approaches to design</li> <li>• project analysis</li> <li>• marketing and market research</li> <li>• techniques, materials, tools and other resources</li> <li>• the realisation of ideas through the manipulation of techniques, materials tools and other resources</li> <li>• work health and safety</li> <li>• evaluation</li> <li>• project management</li> <li>• factors affecting management</li> <li>• communication</li> <li>• research methods</li> <li>• interpreting and presenting data</li> <li>• ethics in research</li> <li>• manufacturing and production</li> <li>• computer-based technologies.</li> </ul> <p>As part of this study, students will complete a minimum of two design projects.</p>	<p><i>Each of the content areas is addressed through the major design project, case study and through other teaching and learning activities.</i></p> <p><b>Innovation and Emerging Technologies</b></p> <p>The study of:</p> <ul style="list-style-type: none"> <li>• designs and design practice</li> <li>• factors which may impact on successful innovation</li> <li>• entrepreneurial activity</li> <li>• the impact of emerging technologies</li> <li>• the impact on Australian society</li> <li>• historical and cultural influences</li> <li>• ethical and environmental issues</li> <li>• creativity.</li> </ul> <p>As part of this study, students will complete a case study of an innovation which includes reference to the above factors.</p> <p><b>Designing and Producing</b></p> <p>The study of:</p> <ul style="list-style-type: none"> <li>• <b>Project proposal and project management</b> <ul style="list-style-type: none"> <li>– identification and exploration of the need</li> <li>– areas of investigation</li> <li>– criteria to evaluate success</li> <li>– action, time and finance plans</li> </ul> </li> <li>• <b>Project development and realisation</b> <ul style="list-style-type: none"> <li>– design theory and practice</li> <li>– creativity</li> <li>– research</li> <li>– development and evaluation of ideas</li> <li>– study of practices in industrial and commercial settings</li> <li>– production techniques</li> <li>– communication</li> <li>– safe working practices</li> <li>– selection and use of resources</li> </ul> </li> <li>• <b>Project evaluation</b> <ul style="list-style-type: none"> <li>– criteria for evaluation</li> <li>– analysis of evaluation</li> <li>– impact of the major design project on the individual, society and the environment.</li> </ul> </li> </ul> <p>As part of this study, students will complete a major design project.</p>

## **Preliminary Course Structure**

The Preliminary course is 120 indicative hours and will involve a minimum of two design projects. The projects will develop skills and knowledge to be further developed in the HSC course. Each project will place emphasis on the development of different skills and knowledge in designing and producing.

Students must participate in hands-on, practical activities to achieve the outcomes of this course. Class activities should be designed to develop knowledge and skills in designing and producing. Students should develop their knowledge of the activities within industrial and commercial settings which support design and technology and relate these processes to the processes used in their own designing and producing.

Design projects must involve the design, production and evaluation of a product, system or environment that includes evidence of design processes recorded in a design folio, which may be in a variety of different forms. Students should be encouraged to communicate their design ideas using a range of appropriate media.

## **HSC Course Structure**

The HSC course is 120 indicative hours and includes the development and realisation of the major design project, a case study of an innovation and other teaching and learning activities. The comprehensive study of design and the processes of designing and producing that were studied in the Preliminary course are synthesised and applied.

The major design project involves students selecting and applying appropriate design, production and evaluation skills to a product, system or environment which satisfies an identified need or opportunity. Students have developed a wide range of skills and knowledge in the Preliminary course and in the HSC course are able to select and use those skills and knowledge appropriate to their selected project. The students relate the techniques and technologies used in industrial and commercial settings to those used in the development of design projects.

The case study involves the critical analysis of an innovation. By conducting a detailed case study of an innovation, students will be able to identify the factors underlying the success of the innovation; analyse ethical issues in relation to the innovation; and discuss the impact of the innovation on Australian society. They may also be able to apply processes similarly in the exploration and development of the major design project.

## 7 Objectives and Outcomes

### 7.1 Table of Objectives and Outcomes

<b>Objectives</b> Students will develop:	<b>Preliminary Outcomes</b> A student:	<b>HSC Outcomes</b> A student:
1. knowledge and understanding about design theory and design processes in a range of contexts	P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects	H1.1 critically analyses the factors affecting design and the development and success of design projects H1.2 relates the practices and processes of designers and producers to the major design project
2. knowledge, understanding and appreciation of the interrelationship of design, technology, society and the environment	P2.1 identifies design and production processes in domestic, community, industrial and commercial settings  P2.2 explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects	H2.1 explains the influence of trends in society on design and production  H2.2 evaluates the impact of design and innovation on society and the environment
3. creativity and an understanding of innovation and entrepreneurial activity in a range of contexts	P3.1 investigates and experiments with techniques in creative and collaborative approaches in designing and producing	H3.1 analyses the factors that influence innovation and the success of innovation H3.2 uses creative and innovative approaches in designing and producing
4. skills in the application of design processes to design, produce and evaluate quality design projects that satisfy identified needs and opportunities	P4.1 uses design processes in the development and production of design solutions to meet identified needs and opportunities  P4.2 uses resources effectively and safely in the development and production of design solutions  P4.3 evaluates the processes and outcomes of designing and producing	H4.1 identifies a need or opportunity and researches and explores ideas for design development and production of the major design project  H4.2 selects and uses resources responsibly and safely to realise a quality major design project  H4.3 evaluates the processes undertaken and the impacts of the major design project

<b>Objectives</b> Students will develop:	<b>Preliminary Outcomes</b> A student:	<b>HSC Outcomes</b> A student:
5. skills in research, communication and management in design and production	<p>P5.1 uses a variety of management techniques and tools to develop design projects</p> <p>P5.2 communicates ideas and solutions using a range of techniques</p> <p>P5.3 uses a variety of research methods to inform the development and modification of design ideas</p>	<p>H5.1 manages the development of a quality major design project</p> <p>H5.2 selects and uses appropriate research methods and communication techniques</p>
6. knowledge and understanding about current and emerging technologies in a variety of settings	<p>P6.1 investigates a range of manufacturing and production processes and relates these to aspects of design projects</p> <p>P6.2 evaluates and uses computer-based technologies in designing and producing</p>	<p>H6.1 justifies technological activities undertaken in the major design project through the study of industrial and commercial practices</p> <p>H6.2 critically assesses the emergence and impact of new technologies, and the factors affecting their development</p>

## 7.2 Key Competencies

Design and Technology Stage 6 provides a context within which to develop general competencies considered essential for the acquisition of effective, higher-order thinking skills necessary for further education, work and everyday life.

Key competencies are embedded in the *Design and Technology Stage 6 Syllabus* to enhance student learning. The key competencies of **collecting, analysing and organising information, communicating ideas and information**, reflect processes of design research and idea development and are explicit in the objectives and outcomes of the syllabus. The other key competencies are developed through the methodologies of the syllabus and through classroom pedagogy. Students work as individuals and as members of groups to conduct investigations and analysis, and through this, the key competencies **planning and organising activities** and **working with others and in teams** are developed. When students develop, modify and construct projects, they are developing the key competency **using mathematical ideas and techniques**. During investigations, students will need to use appropriate information technologies and so develop the key competency of **using technology**. Finally, experimentation with a range of materials, processes and techniques, contributes towards the students' development of the key competency **solving problems**.

## 8 Content: Design and Technology Stage 6 Preliminary Course

Outcomes	Students learn about:	Students learn to:
P1.1 examines design theory and practice, and considers the factors affecting designing and producing in design projects	<ul style="list-style-type: none"> <li>design theory and practice                             <ul style="list-style-type: none"> <li>range of design professions</li> <li>nature and variety of work of a range of design professions</li> <li>interaction and overlap of design professions</li> <li>Australian and international designers and their work</li> </ul> </li> <li>design processes                             <ul style="list-style-type: none"> <li>design processes used in domestic, community, industrial and commercial settings from initial contact with clients to final presentation</li> </ul> </li> <li>factors affecting designing and producing including:                             <ul style="list-style-type: none"> <li>appropriateness of the design solution</li> <li>needs</li> <li>function</li> <li>aesthetics</li> <li>finance</li> <li>ergonomics</li> <li>work health and safety</li> <li>quality</li> <li>short-term and long-term environmental consequences</li> <li>obsolescence</li> <li>life cycle analysis</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>investigate at least one designer and the nature of their work</li> <li>identify a range of career opportunities in design and production</li> <li>describe and analyse the processes undertaken when designing</li> <li>apply a design process when developing design projects</li> <li>identify factors affecting design                             <ul style="list-style-type: none"> <li>analyse design products</li> <li>compare and contrast the factors to be considered in the design and production of design projects</li> <li>appraise the aesthetic and functional qualities of a variety of design products, systems and/or environments</li> </ul> </li> </ul>
P2.1 identifies design and production processes in domestic, community, industrial and commercial settings	<ul style="list-style-type: none"> <li>design and production processes in domestic, community, industrial and commercial settings</li> <li>technologies in industrial and commercial settings</li> </ul>	<ul style="list-style-type: none"> <li>compare and contrast technologies and processes used in design projects to activities of design and production in industrial and commercial settings</li> </ul>

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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
P2.2 explains the impact of a range of design and technology activities on the individual, society and the environment through the development of projects	<ul style="list-style-type: none"> <li>environmental and social issues including:                             <ul style="list-style-type: none"> <li>personal values</li> <li>cultural beliefs</li> <li>sustainability</li> <li>safety and health</li> <li>community needs</li> <li>individual needs</li> <li>equity</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>assess the impact of the activities undertaken in the development of design projects on the individual, society and the environment</li> <li>evaluate examples of design and production and relate these to environmental and social issues</li> </ul>
P3.1 investigates and experiments with techniques in creative and collaborative approaches in designing and producing	<ul style="list-style-type: none"> <li>creative approaches including:                             <ul style="list-style-type: none"> <li>cognitive organisers</li> <li>strategies for problem solving and solution creating</li> <li>ideas generation</li> </ul> </li> <li>collaborative approaches                             <ul style="list-style-type: none"> <li>design teams: roles and tasks of members</li> <li>communication between and within design teams</li> <li>team responsibilities</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>select and apply a variety of cognitive organisers</li> <li>apply problem solving techniques to identified problems</li> <li>identify the factors that contribute to successful work and collaboration</li> <li>collaborate and participate in design teams</li> <li>work cooperatively</li> </ul>
P4.1 uses design processes in the development and production of design solutions to meet identified needs and opportunities	<ul style="list-style-type: none"> <li>project analysis                             <ul style="list-style-type: none"> <li>design briefs</li> <li>appropriateness of design solutions</li> <li>criteria for evaluation and factors to consider</li> </ul> </li> <li>marketing and market research                             <ul style="list-style-type: none"> <li>purpose of market research</li> <li>sources of data and information gathering techniques</li> <li>marketing environment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>formulate and analyse design briefs</li> <li>identify the parameters of design</li> <li>identify criteria for success of design projects</li> <li>produce functionally and aesthetically appropriate design projects</li> <li>conduct market research to identify needs and opportunities</li> </ul>

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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
P4.2 uses resources effectively and safely in the development and production of design solutions	<ul style="list-style-type: none"> <li>– using materials, tools, techniques and other resources</li> <li>– characteristics and properties</li> <li>– functions and uses</li> <li>– experimentation</li> <li>– criteria for selection</li> <li>– consequences of use</li> </ul> <ul style="list-style-type: none"> <li>• the realisation of ideas through the manipulation of materials, tools and techniques and other resources</li> </ul> <ul style="list-style-type: none"> <li>• safety                             <ul style="list-style-type: none"> <li>– safety in the use of materials, tools and techniques</li> <li>– legislative requirements including work health and safety</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• select appropriate materials, tools, techniques and other resources</li> <li>• justify and explain the selection and use of resources in design projects</li> </ul> <ul style="list-style-type: none"> <li>• develop and demonstrate proficiency in using an appropriate range of materials, tools, techniques and other resources</li> </ul> <ul style="list-style-type: none"> <li>• implement safe work practices when designing and producing</li> </ul>
P4.3 evaluates the processes and outcomes of designing and producing	<ul style="list-style-type: none"> <li>• evaluation                             <ul style="list-style-type: none"> <li>– developing and refining ideas</li> <li>– criteria for evaluation</li> <li>– methods of evaluation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• establish the parameters for design and identify criteria for the evaluation of design projects</li> <li>• examine processes undertaken in design projects</li> <li>• conduct continual evaluation throughout design and production</li> <li>• assess the impact of designing and design projects on society and the environment</li> <li>• test and evaluate the appropriateness of design solutions</li> </ul>

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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
P5.1 uses a variety of management techniques and tools to develop design projects	<ul style="list-style-type: none"> <li>– project management</li> <li>– management techniques and tools, including those used by designers in industrial and commercial settings</li> <li>• factors affecting management including:                             <ul style="list-style-type: none"> <li>– identifying available resources</li> <li>– clarifying values</li> <li>– setting goals</li> <li>– setting standards</li> <li>– evaluating the costs and benefits of each alternative</li> <li>– making and implementing decisions</li> <li>– task descriptions and sequencing</li> <li>– documentation of plans</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• identify a variety of management techniques and tools</li> <li>• plan, implement and evaluate a sequence of operations for the completion of design projects</li> </ul>
P5.2 communicates ideas and solutions using a range of techniques	<ul style="list-style-type: none"> <li>• communication                             <ul style="list-style-type: none"> <li>– forms of communication including verbal, written, graphical, visual, audio</li> <li>– elements of the communication process which include sender, receiver, medium, message</li> <li>– criteria for evaluating communication including clarity of message, appropriateness of method chosen, ease of interpretation</li> <li>– communicating information through a variety of media</li> <li>– visualising solutions</li> <li>– the purpose of prototypes and/or models</li> <li>– presentation techniques suited to the needs of design clients and design projects</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• use appropriate design and technology terminology</li> <li>• experiment with a range of techniques and forms to visualise and communicate ideas and solutions</li> <li>• communicate design ideas and solutions effectively using a range of technologies</li> <li>• use appropriate standards and conventions to visualise and communicate ideas and solutions</li> <li>• justify the selection and use of communication techniques</li> </ul>



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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
P5.3 uses a variety of research methods to inform the development and modification of design ideas	<ul style="list-style-type: none"> <li>• research methods                             <ul style="list-style-type: none"> <li>– qualitative and quantitative research</li> <li>– questionnaires</li> <li>– surveys</li> <li>– interviews</li> <li>– observation</li> <li>– tests and experiments</li> <li>– statistical analysis</li> <li>– information research including print and electronic sources</li> </ul> </li> <li>• interpreting and presenting data</li> <li>• ethics in research</li> </ul>	<ul style="list-style-type: none"> <li>• select and use a variety of research methods to inform the generation, modification, and development of design ideas</li> <li>• analyse, interpret and apply research data to the development of design projects</li> </ul>
P6.1 investigates a range of manufacturing and production processes and relates these to aspects of design projects	<ul style="list-style-type: none"> <li>– manufacturing and production</li> <li>– selection of processes appropriate to a need</li> <li>– development of appropriate skills and techniques</li> </ul>	<ul style="list-style-type: none"> <li>• account for practices undertaken in industrial and commercial settings</li> <li>• demonstrate quality production skills in the development of design projects</li> </ul>
P6.2 evaluates and uses computer-based technologies in designing and producing.	<ul style="list-style-type: none"> <li>• computer-based technologies and their application including:                             <ul style="list-style-type: none"> <li>• modelling</li> <li>• research</li> <li>• simulation and graphics</li> <li>• communication</li> <li>• presentation.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• discriminate in the choice and use of computer-based technologies to develop, communicate and present design ideas and processes.</li> </ul>

## 9 Content: Design and Technology Stage 6 HSC Course

Outcomes	Students learn about:	Students learn to:
H1.1 critically analyses the factors affecting design and the development and success of design projects	<ul style="list-style-type: none"> <li>• factors affecting designing and producing, including:                             <ul style="list-style-type: none"> <li>– appropriateness of the design solution</li> <li>– needs</li> <li>– function</li> <li>– aesthetics</li> <li>– finance</li> <li>– ergonomics</li> <li>– work health and safety</li> <li>– quality</li> <li>– short-term and long-term environmental consequences</li> <li>– obsolescence</li> <li>– life cycle analysis</li> </ul> </li> <li>• examples of success and failure in design</li> </ul>	<ul style="list-style-type: none"> <li>• apply factors affecting design to the development of the major design project</li> <li>• debate the issues and factors influencing design and design practice</li> <li>• critically analyse examples of success and failure in design solutions</li> </ul>
H1.2 relates the practices and processes of designers and producers to the major design project	<ul style="list-style-type: none"> <li>• the work of designers                             <ul style="list-style-type: none"> <li>– design practice</li> <li>– processes used by designers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• emulate, where appropriate, the practices and processes used by designers to assist in the development of the major design project</li> </ul>
H2.1 explains the influence of trends in society on design and production	<ul style="list-style-type: none"> <li>• trends in designing and producing, including those which are influenced by social, global, political, economic and environmental issues</li> <li>• historical and cultural influences on designing and producing, including:                             <ul style="list-style-type: none"> <li>– changing social trends</li> <li>– cultural diversity</li> <li>– the changing nature of work</li> <li>– technological change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• discuss the issues arising from trends in design and technological activity</li> <li>• identify and acknowledge historical and cultural influences on design and technological development</li> </ul>
H2.2 evaluates the impact of design and innovation on society and the environment	<ul style="list-style-type: none"> <li>• ethical and environmental issues                             <ul style="list-style-type: none"> <li>– ethical and environmental considerations for designers and society</li> <li>– sustainable technologies</li> <li>– protection of intellectual property</li> <li>– rights and responsibilities of the designer</li> <li>– impact on Australian society</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• critically analyse ethical issues in relation to innovation</li> <li>• discuss ethical and environmental considerations for designers and society in general</li> <li>• identify the factors which contribute to the efficiency and sustainability of technologies</li> </ul>

Outcomes	Students learn about:	Students learn to:
H3.1 analyses the factors that influence innovation and the success of innovation	<ul style="list-style-type: none"> <li>• factors that impact on success of innovation including: <ul style="list-style-type: none"> <li>– timing, available and emerging technologies, historical and cultural, political, economic and legal factors, marketing strategies</li> </ul> </li> <li>• the role of a variety of agencies that may impact upon the success of innovation</li> <li>• entrepreneurial activity <ul style="list-style-type: none"> <li>– nature of entrepreneurial activity</li> <li>– role in design and technological activity</li> <li>– agencies which influence entrepreneurial activity</li> <li>– management and entrepreneurial activity</li> <li>– legal and ethical issues</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• differentiate between factors which have contributed to the success or failure of innovations</li> <li>• describe the role of a variety of agencies that influence the development, implementation and acceptance of innovation</li> <li>• discuss the influence of entrepreneurial activity on successful design and innovation</li> <li>• discuss the legal and ethical issues related to entrepreneurial activities</li> </ul>
H3.2 uses creative and innovative approaches in designing and producing	<ul style="list-style-type: none"> <li>• creativity and innovative design practice <ul style="list-style-type: none"> <li>– processes undertaken to develop innovations</li> <li>– success of innovation</li> <li>– adaptation and development of ideas</li> <li>– responding to motivational stimuli</li> <li>– creative thinking</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• demonstrate creativity in the development of the major design project</li> <li>• critically analyse successful innovation</li> <li>• discuss concepts of quality, innovation and creativity</li> </ul>

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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
H4.1 identifies a need or opportunity and researches and explores ideas for design development and production of the major design project	<ul style="list-style-type: none"> <li>needs analysis                             <ul style="list-style-type: none"> <li>researching and developing ideas</li> <li>identifying opportunities</li> <li>formulating an individual design proposal</li> </ul> </li> <li>research and methods of experimentation to generate ideas</li> </ul>	<ul style="list-style-type: none"> <li>develop a major design project proposal that clearly outlines:                             <ul style="list-style-type: none"> <li>identification and exploration of the need</li> <li>areas of investigation</li> <li>criteria to evaluate success</li> </ul> </li> <li>respond to the findings of experimentation and research</li> <li>experiment with materials, tools and technologies when designing</li> </ul>
H4.2 selects and uses resources responsibly and safely to realise a quality major design project	<ul style="list-style-type: none"> <li>factors to be considered when selecting resources including:                             <ul style="list-style-type: none"> <li>safety</li> <li>ethical issues</li> <li>environmental issues</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>explain the principles underlying safe working practices and environments                             <ul style="list-style-type: none"> <li>identify, select, use and justify the use of resources based on the results and analysis of research</li> </ul> </li> </ul>
H4.3 evaluates the processes undertaken and the impacts of the major design project	<ul style="list-style-type: none"> <li>project evaluation                             <ul style="list-style-type: none"> <li>ongoing evaluation</li> <li>criteria to evaluate success</li> <li>analysing criteria for evaluation</li> <li>implementation of design solutions</li> </ul> </li> <li>the impact of the major design project                             <ul style="list-style-type: none"> <li>on the individual</li> <li>on society</li> <li>on the environment (local and global)</li> <li>in relation to potential social or environmental costs or benefits</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>identify functional and aesthetic criteria of the major design project</li> <li>test possible solutions of the major design project</li> <li>conduct continual evaluation throughout the design and production of the major design project</li> <li>evaluate the impact of the major design project on the individual, society and the environment</li> <li>evaluate the major design project in terms of the identified criteria for success</li> </ul>
H5.1 manages the development of a quality major design project	<ul style="list-style-type: none"> <li>project management                             <ul style="list-style-type: none"> <li>including methods of managing action, time and finance appropriate to the nature of individual design projects</li> <li>documentation procedures for developing management plans</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>formulate management plans, including:                             <ul style="list-style-type: none"> <li>action</li> <li>time</li> <li>finance</li> </ul> </li> <li>apply and evaluate management plans</li> <li>manage a quality major design project that successfully meets the identified need</li> </ul>

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<b>Outcomes</b>	<b>Students learn about:</b>	<b>Students learn to:</b>
H5.2 selects and uses appropriate research methods and communication techniques	<ul style="list-style-type: none"> <li>research methods                             <ul style="list-style-type: none"> <li>data collection, analysis, interpretation and application of conclusions</li> </ul> </li> <li>communication                             <ul style="list-style-type: none"> <li>presenting information</li> <li>visualising solutions</li> <li>communication and presentation methods appropriate to the target market</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>conduct research to examine the success of an innovation and produce an investigative report</li> <li>select and apply appropriate research methods for the major design project and case study</li> <li>justify decisions made based on analysis of research</li> <li>select and use appropriate communication techniques for the development of the major design project</li> <li></li> </ul>
H6.1 justifies technological activities undertaken in the major design project through the study of industrial and commercial practices	<ul style="list-style-type: none"> <li>practices in industrial and commercial settings as they relate to the major design project including;                             <ul style="list-style-type: none"> <li>safe work practices using selected resources</li> <li>production techniques</li> <li>selection of processes appropriate to an identified need or opportunity</li> <li>collaborative designing and design teams</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>identify design and production processes used in domestic, community, industrial and commercial settings</li> <li>implement safe work practices using selected materials and techniques in design and production of the major design project</li> <li>explain the principles underlying safe working practices and environments</li> </ul>
H6.2 critically assesses the emergence and impact of new technologies, and the factors affecting their development.	<ul style="list-style-type: none"> <li>emerging technologies                             <ul style="list-style-type: none"> <li>factors affecting their development</li> <li>criteria for evaluation</li> <li>impact on society and the environment</li> <li>impact on innovation.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>appraise the ecological, economic, social, ethical, and legal implications of new and emerging technologies</li> <li>analyse the impact of emerging technologies on innovation.</li> </ul>

## **10 Course Requirements**

The *Design and Technology Stage 6 Syllabus* includes a Preliminary course of 120 hours (indicative time) and an HSC course of 120 hours (indicative time).

There is no prerequisite study for the Preliminary course. Completion of the Preliminary course is a requisite for the study of the HSC course.

## 11 Post-school Opportunities

The study of Design and Technology Stage 6 provides students with knowledge, understanding and skills that form a valuable foundation for a range of courses at university and other tertiary institutions.

In addition, the study of Design and Technology Stage 6 assists students to prepare for employment and full and active participation as citizens. In particular, there are opportunities for students to gain recognition in vocational education and training. Teachers and students should be aware of these opportunities.

### Recognition of Student Achievement in Vocational Education and Training (VET)

Wherever appropriate, the skills and knowledge acquired by students in their study of HSC courses should be recognised by industry and training organisations. Recognition of student achievement means that students who have satisfactorily completed HSC courses will not be required to repeat their learning in courses in TAFE NSW or other Registered Training Organisations (RTOs).

Registered Training Organisations, such as TAFE NSW, provide industry training and issue qualifications within the Australian Qualifications Framework (AQF).

The degree of recognition available to students in each subject is based on the similarity of outcomes between HSC courses and industry training packages endorsed within the AQF. Training packages are documents that link an industry's competency standards to AQF qualifications. More information about industry training packages can be found on the [National Training Information Service \(NTIS\)](http://www.ntis.gov.au) website ([www.ntis.gov.au](http://www.ntis.gov.au)).

### Recognition by TAFE NSW

TAFE NSW conducts courses in a wide range of industry areas, as outlined each year in the *TAFE NSW Handbook*. Under current arrangements, the recognition available to students of Design and Technology in relevant courses conducted by TAFE is described in the *HSC/TAFE Credit Transfer Guide*. This guide is produced by the Board of Studies and TAFE NSW and is distributed annually to all schools and colleges. Teachers should refer to this guide and be aware of the recognition available to their students through the study of Design and Technology Stage 6. This information can be found on the [TAFE NSW](http://www.tafensw.edu.au/mchoice) website ([www.tafensw.edu.au/mchoice](http://www.tafensw.edu.au/mchoice)).

### Recognition by other Registered Training Organisations

Students may also negotiate recognition into a training package qualification with another Registered Training Organisation. Each student will need to provide the RTO with evidence of satisfactory achievement in Design and Technology Stage 6 so that the degree of recognition available can be determined.

## **12 Assessment and Reporting**

Advice on appropriate assessment practice in relation to the Design and Technology syllabus is contained in *Assessment and Reporting in Design and Technology Stage 6*. That document provides general advice on assessment in Stage 6 as well as the specific requirements for the Preliminary and HSC courses. The document contains:

- suggested components and weightings for the internal assessment of the Preliminary course
- mandatory components and weightings for the internal assessment of the HSC course
- the HSC examination specifications, which describe the format of the external HSC examination.

The document and other resources and advice related to assessment in Stage 6 Design and Technology are available on the [Board's website](http://www.boardofstudies.nsw.edu.au/syllabus_hsc) ([www.boardofstudies.nsw.edu.au/syllabus\\_hsc](http://www.boardofstudies.nsw.edu.au/syllabus_hsc)).