

Design 2025 v1.0

General senior syllabus

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Queensland syllabuses for senior subjects

In Queensland, a syllabus for a senior subject is an official 'map' of a senior school subject. A syllabus's function is to support schools in delivering the Queensland Certificate of Education (QCE) system through high-quality and high-equity curriculum and assessment.

Syllabuses are based on design principles developed from independent international research about how excellence and equity are promoted in the documents teachers use to develop and enliven the curriculum.

Syllabuses for senior subjects build on student learning in the Prep to Year 10 Australian Curriculum and include General, General (Extension), Senior External Examination (SEE), Applied, Applied (Essential) and Short Course syllabuses.

More information about syllabuses for senior subjects is available at www.qcaa.qld.edu.au/senior/senior-subjects and in the 'Queensland curriculum' section of the *QCE and QCIA policy and procedures handbook*.

Teaching, learning and assessment resources will support the implementation of a syllabus for a senior subject. More information about professional resources for senior syllabuses is available on the QCAA website and via the QCAA Portal.

Course overview

Rationale

Technologies have been an integral part of society for as long as humans have had the desire to create solutions to improve their own and others' quality of life. Technologies have an impact on people and societies by transforming, restoring and sustaining the world in which we live.

Australia needs enterprising and innovative individuals with the ability to make discerning decisions concerning the development, use and impact of technologies. When developing technologies, these individuals need to be able to work independently and collaboratively to solve complex, open-ended problems. Subjects in the Technologies learning area prepare students to be effective problem-solvers as they learn about and work with contemporary and emerging technologies.

The Design subject focuses on the application of design thinking to envisage creative products, services and environments. Designing is a complex and sophisticated form of problem-solving that uses divergent and convergent thinking approaches that can be practised and improved. Designers are separated from the constraints of production processes to allow them to appreciate and exploit innovative ideas.

In Unit 1, students will learn about and experience designing in the context of stakeholder-centred design. They will be introduced to the range and importance of stakeholders and how the design process is used to respond to their needs and wants. In Unit 2, students will learn about and experience designing in the context of commercial design, considering the role of the client and the influence of economic, social and cultural issues. They will use a collaborative design approach. In Unit 3, students will learn about and experience designing in the context of human-centred design. They will use designing with empathy as an approach as they respond to the needs and wants of a particular person. In Unit 4, students will learn about and experience designing in the context of sustainable design. They will explore design opportunities and design to improve economic, social and ecological sustainability.

The teaching and learning approach uses a design process grounded in the problem-based learning framework. This approach enables students to learn about and experience design through exploring needs, wants and opportunities; developing ideas and design concepts; using sketching and low-fidelity prototyping skills; and evaluating ideas. Students communicate design proposals to suit different audiences.

Students will learn how design has influenced the economic, social and cultural environment in which they live. They will understand the agency of humans in conceiving and imagining possible futures through design. Students will develop valuable 21st century skills in critical thinking, creative thinking, communication, collaboration and teamwork, personal and social skills, and information & communication technologies (ICT) skills. Collaboration, teamwork and communication are crucial skills needed to work in design teams and liaise with stakeholders. The design thinking students learn is broadly applicable to a range of professions and supports the development of critical and creative thinking.

Students will develop an appreciation of designers and their role in society. They will learn the value of creativity and build resilience as they experience iterative design processes, where the best ideas may be the result of trial and error and a willingness to take risks and experiment with alternatives. Design equips students with highly transferrable, future-focused thinking skills relevant to a global context.

Syllabus objectives

The syllabus objectives outline what students have the opportunity to learn.

1. Describe design problems and design criteria.

When students describe, they give an account of the aesthetic, cultural, economic, social and technical features related to stakeholders' requirements that define problems. When students describe design criteria, they state requirements that integrate the principles of good design that will be used to judge the quality of ideas and design concepts.

2. Represent ideas, design concepts and design information using visual representation skills.

When students represent, they use visual spatial thinking to comprehend ideas. Visual representations including schematic sketching, ideation sketching, and low-fidelity prototyping are used in the design process to show ideas, design concepts and design information. They apply the elements and principles of design to differentiate between critical and non-critical attributes and show their progression of understanding using sequences of representations.

3. Analyse needs, wants and opportunities using data.

When students analyse, they examine design opportunities and stakeholders' needs and wants. They use primary and secondary data to identify aesthetic, cultural, economic, social and technical features, the relationships between them and the reasonableness of information.

4. Devise ideas in response to design problems.

When students devise, they think out and create ideas using divergent thinking to demonstrate fluency, flexibility, originality and elaboration of ideas in the develop phase of the design process. Ideas are student's own visual mental images of possible ways of responding to a design problem, brought into existence as a sketch or low-fidelity prototype.

5. Evaluate ideas to make refinements.

When students evaluate, they critique and refine ideas using convergent thinking in the develop phase of the design process. They judge the extent to which ideas meet design criteria. They make judgments about strengths, limitations and implications. When students make refinements, they modify and improve ideas based on the evaluation.

6. Propose design concepts in response to design problems.

When students propose design concepts they synthesise, the attributes of multiple ideas and design information to put forward a preferred designed solution to a design problem.

7. Make decisions about and use mode-appropriate features, language and conventions for particular purposes and contexts.

When students make decisions about mode-appropriate features, language and conventions, they use written and spoken features with visual representations to express meaning for particular purposes in a range of design experiences. Written communication includes language conventions, specific vocabulary and language features such as annotations, paragraphs and sentences. Spoken communication includes verbal features (e.g. pronunciation, phrasing and pausing, audibility and clarity, volume, pace, silence) and nonverbal features (e.g. facial expressions, gestures, proximity, stance, movement) and may be for live or virtual audiences. Students use referencing conventions to practise ethical scholarship for particular purposes.

Designing a course of study in Design

Syllabuses are designed for teachers to make professional decisions to tailor curriculum and assessment design and delivery to suit their school context and the goals, aspirations and abilities of their students within the parameters of Queensland's senior phase of learning.

The syllabus is used by teachers to develop curriculum for their school context. The term *course of study* describes the unique curriculum and assessment that students engage with in each school context. A course of study is the product of a series of decisions made by a school to select, organise and contextualise subject matter, integrate complementary and important learning, and create assessment tasks in accordance with syllabus specifications.

It is encouraged that, where possible, a course of study is designed such that teaching, learning and assessment activities are integrated and enlivened in an authentic setting.

Course structure

Design is a General senior syllabus. It contains four QCAA-developed units from which schools develop their course of study.

Each unit has been developed with a notional time of 55 hours of teaching and learning, including assessment.

Students should complete Unit 1 and Unit 2 before beginning Units 3 and 4. Units 3 and 4 are studied as a pair.

More information about the requirements for administering senior syllabuses is available in the 'Queensland curriculum' section of the [QCE and QCIA policy and procedures handbook](#).

Curriculum

Senior syllabuses set out only what is essential while being flexible so teachers can make curriculum decisions to suit their students, school context, resources and expertise.

Within the requirements set out in this syllabus and the [QCE and QCIA policy and procedures handbook](#), schools have autonomy to decide:

- how and when subject matter is delivered
- how, when and why learning experiences are developed, and the context in which learning occurs
- how opportunities are provided in the course of study for explicit and integrated teaching and learning of complementary skills.

These decisions allow teachers to develop a course of study that is rich, engaging and relevant for their students.

Assessment

Senior syllabuses set out only what is essential while being flexible so teachers can make assessment decisions to suit their students, school context, resources and expertise.

General senior syllabuses contain assessment specifications and conditions for the assessment instruments that must be implemented with Units 3 and 4. These specifications and conditions ensure comparability, equity and validity in assessment.

Within the requirements set out in this syllabus and the [QCE and QCIA policy and procedures handbook](#), schools have autonomy to decide:

- specific assessment task details
- assessment contexts to suit available resources
- how the assessment task will be integrated with teaching and learning activities
- how authentic the task will be.

In Unit 1 and Unit 2, schools:

- develop at least two but no more than four assessments
- complete at least one assessment for each unit
- ensure that each unit objective is assessed at least once.

In Units 3 and 4, schools develop three assessments using the assessment specifications and conditions provided in the syllabus.

More information about assessment in senior syllabuses is available in 'The assessment system' section of the [QCE and QCIA policy and procedures handbook](#).

Subject matter

Each unit contains a unit description, unit objectives and subject matter. Subject matter is the body of information, mental procedures and psychomotor procedures (see Marzano & Kendall 2007, 2008) that are necessary for students' learning and engagement with the subject. Subject matter itself is not the specification of learning experiences but provides the basis for the design of student learning experiences.

Subject matter has a direct relationship with the unit objectives and provides statements of learning that have been constructed in a similar way to objectives.

Aboriginal perspectives and Torres Strait Islander perspectives

The QCAA is committed to reconciliation. As part of its commitment, the QCAA affirms that:

- Aboriginal peoples and Torres Strait Islander peoples are the first Australians, and have the oldest living cultures in human history
- Aboriginal peoples and Torres Strait Islander peoples have strong cultural traditions and speak diverse languages and dialects, other than Standard Australian English
- teaching and learning in Queensland schools should provide opportunities for students to deepen their knowledge of Australia by engaging with the perspectives of Aboriginal peoples and Torres Strait Islander peoples
- positive outcomes for Aboriginal students and Torres Strait Islander students are supported by successfully embedding Aboriginal perspectives and Torres Strait Islander perspectives across planning, teaching and assessing student achievement.

Guidelines about Aboriginal perspectives and Torres Strait Islander perspectives and resources for teaching are available at www.qcaa.qld.edu.au/k-12-policies/aboriginal-torres-strait-islander-perspectives.

Where appropriate, Aboriginal perspectives and Torres Strait Islander perspectives have been embedded in the subject matter.

Complementary skills

Opportunities for the development of complementary skills have been embedded throughout subject matter. These skills, which overlap and interact with syllabus subject matter, are derived from current education, industry and community expectations and encompass the knowledge, skills, capabilities, behaviours and dispositions that will help students live and work successfully in the 21st century.

These complementary skills are:

- literacy — the knowledge, skills, behaviours and dispositions about language and texts essential for understanding and conveying English language content
- numeracy — the knowledge, skills, behaviours and dispositions that students need to use mathematics in a wide range of situations, to recognise and understand the role of mathematics in the world, and to develop the dispositions and capacities to use mathematical knowledge and skills purposefully
- 21st century skills — the attributes and skills students need to prepare them for higher education, work, and engagement in a complex and rapidly changing world. These skills include critical thinking, creative thinking, communication, collaboration and teamwork, personal and social skills, and digital literacy. The explanations of associated skills are available at www.qcaa.qld.edu.au/senior/senior-subjects/general-subjects/21st-century-skills.

It is expected that aspects of literacy, numeracy and 21st century skills will be developed by engaging in the learning outlined in this syllabus. Teachers may choose to create additional explicit and intentional opportunities for the development of these skills as they design the course of study.

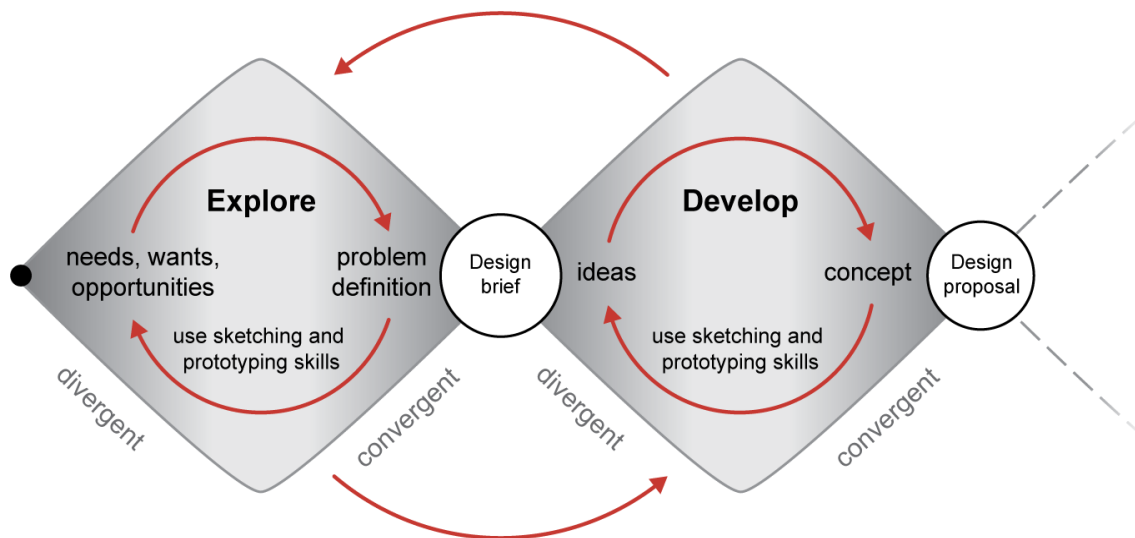
Additional subject-specific information

Additional subject-specific information has been included to support and inform the development of a course of study.

Procedural knowledge

This procedural knowledge must be integrated into the subject matter and assessment of all units. Each of the units in Design has a particular design context with associated knowledge and skills. The units are structured to provide students with the opportunity to apply the design process (see Figure 1) and associated visual representation skills (see Table 1) through each of the four units.

Figure 1: The design process in Design



The design process is represented by a version of the Double Diamond design process (Design Council 2015). This iterative model shows two phases that are critical to the design process — each with an initial phase of divergent thinking where a broad insight is sought, followed by a phase of convergent thinking where that insight is narrowed and brought into something usable. The first point of convergence defines the problem and the second delivers a design proposal. The phases involve exploring and developing, with communication to stakeholders required at each of the points of convergence.

Explore

Students:

- identify stakeholders (Unit 1, 2 and 3) or design opportunities (Unit 4)
- analyse existing designs, needs and wants of stakeholders or design opportunities to identify aesthetic, cultural, economic, social and technical features
- define design problems
- use sketching and low-fidelity prototyping skills to represent information.

At the conclusion of the explore phase, describe a design problem that:

- relates to the real world
- is open-ended with no single correct answer
- relates to stakeholder needs and wants or a design opportunity
- is described by
 - aesthetic, cultural, economic, social and technical features
 - constraints, e.g. teacher specified available time, physical realities, legalities
- is accompanied by design criteria that can be used to judge the quality of ideas and design concept
- requires ideas and design concept to be developed.

Develop

Students:

- devise ideas using sketching, low-fidelity prototyping skills and divergent thinking in response to the design problem
- use convergent thinking to make refinements based on evaluation of ideas against the design criteria
- propose a design concept that best meets the design criteria

At the conclusion of the develop phase, visually communicate a design proposal to stakeholders.

Visual representation skills

Throughout the design process, students use sketching and prototyping skills to visually represent ideas, design concepts and design information. The categories of sketching and prototyping skills (see Table 1) used are:

- schematic
- ideation
- illustration
- low-fidelity prototype.

Table 1: Visual representation skills

Category	Description	Examples
<p>schematic</p> <ul style="list-style-type: none"> informal sketch, usually produced using manual freehand techniques, but may be software assisted 	<ul style="list-style-type: none"> an abstract representation that aids in the conceptualisation of relationships between design information and attributes of ideas; schematic sketches may be used to record and analyse knowledge and data 	<ul style="list-style-type: none"> diagram mind map empathy map functional relationships diagram; bubbles and diagrammatic symbols to depict functions and relationships of adjacent attributes of a design flow chart website architecture diagram
<p>ideation</p> <ul style="list-style-type: none"> informal sketch, usually produced using manual freehand techniques, but may be software assisted 	<ul style="list-style-type: none"> representations of mental images that aid in the development of ideas; such sketches may be very informal and conceptual or relatively accurate, but their purpose is the rapid devising and testing of ideas 	<ul style="list-style-type: none"> pictorial sketch top view sketch idea sketch study sketch sketch plan interface wireframe
<p>illustration</p> <ul style="list-style-type: none"> produced using manual freehand techniques or software assisted techniques; often includes colour, rendering and contextual features 	<ul style="list-style-type: none"> a pictorial simulation of the appearance of an object as it would be seen by an observer who looks from a selected point of view; often used to communicate a refined design concept 	<ul style="list-style-type: none"> line drawing rendered sketch explanatory sketch; shows the relationship between parts of an idea; exploded or open in line for assembly perspective sketch isometric sketch
	<ul style="list-style-type: none"> orthographic views of a 3D object projected onto 2D planes; often used to communicate a refined design concept 	<ul style="list-style-type: none"> plans elevations sections developments/nets patterns flat drawings; in fashion, a 2D view used to represent garment details
<p>low-fidelity prototype</p> <ul style="list-style-type: none"> used throughout the design process to quickly and simply move ideas from abstract to reality to clarify understanding and inform further exploration and development; usually informal and conceptual, may be 	<ul style="list-style-type: none"> digital low-fidelity prototype — a simple, non-functional interactive (simulates the two-way flow of information between a computer and user) or sequential experiences (simulates the presentation of information by a computer using images, text, sound; motion graphics) produced using basic ICT software that may be unrelated to how a final digital product is produced. Used to rapidly represent ideas to aid understanding and testing; 	<ul style="list-style-type: none"> website simulation mobile application simulation walk-throughs of environments video animation

Category	Description	Examples
<p>produced using physical and/or digital techniques; the outcome may include a combination of physical and digital attributes</p>	<ul style="list-style-type: none"> • physical low-fidelity prototype — a simple non-functional 3D object using basic processes and materials that may be unrelated to how a final product is produced. Typically generated by cutting, joining and forming materials such as card, clay, metal, paper, plastic, textile and wood. Used to rapidly represent the form of ideas to aid understanding and testing 	<ul style="list-style-type: none"> • form study; basic size and proportion of a product • massing models; architectural shape and form without structural detail • scale models • mock-ups • maquette • appearance models; represents the look and feel but has limited functionality • toile

Reporting

General information about determining and reporting results for senior syllabuses is provided in the 'Determining and reporting results' section of the [QCE and QCIA policy and procedures handbook](#).

Reporting standards

Reporting standards are summary statements that describe typical performance at each of the five levels (A–E).

A
<p>The student, in a range of design experiences, demonstrates discerning description of design problems and essential design criteria, and sophisticated representation of design information using sketching and low-fidelity prototyping.</p> <p>The student demonstrates insightful analysis of needs, wants and opportunities using data.</p> <p>The student demonstrates perceptive devising of credible ideas with fluency, flexibility, originality and elaboration in response to design problems; critical evaluation of ideas to make discerning refinements; coherent and innovative design concepts; discerning decision-making about and fluent use of mode-appropriate features, language and conventions for particular audiences and purposes.</p>
B
<p>The student, in a range of design experiences, demonstrates effective description of design problems and design criteria, and considered representation of design information using sketching and low-fidelity prototyping.</p> <p>The student demonstrates considered analysis of needs, wants and opportunities using data.</p> <p>The student demonstrates purposeful devising of credible ideas with fluency, originality and elaboration in response to design problems; reasoned evaluation of ideas to make effective refinements; logical design concepts; effective decision-making about and proficient use of mode-appropriate features, language and conventions for particular audiences and purposes.</p>
C
<p>The student, in a range of design experiences, demonstrates adequate description of design problems and some design criteria, and appropriate representation of design information using sketching and low-fidelity prototyping.</p> <p>The student demonstrates appropriate analysis of needs, wants and opportunities using data.</p> <p>The student demonstrates appropriate devising of credible ideas in response to design problems; feasible evaluation of ideas to make adequate refinements; simple design concepts; appropriate decision-making about and use of mode-appropriate features, language and conventions for particular purposes and contexts.</p>

D

The student, in a range of design experiences, demonstrates superficial description of design problems and some design criteria, and cursory representation of design information using sketching or low-fidelity prototyping.

The student demonstrates superficial analysis of needs or wants or opportunities.

The student demonstrates superficial devising of ideas in response to design problems; superficial evaluation of ideas to make superficial refinements; rudimentary design concepts; variable decision-making and inconsistent use of mode-appropriate features, language and conventions for particular purposes and contexts.

E

The student, in a range of design experiences, demonstrates description of aspects of design problems and illogical representation of design information using sketching or low-fidelity prototyping.

The student demonstrates the making of statements about needs or wants or opportunities.

The student demonstrates disjointed devising of ideas and identification of changes to ideas; unclear design concepts; unclear decision-making about or use of mode-appropriate features and language.

Determining and reporting results

Unit 1 and Unit 2

Schools make judgments on individual assessment instruments using a method determined by the school. They may use the reporting standards or develop an instrument-specific marking guide (ISMG). Marks are not required for determining a unit result for reporting to the QCAA.

The unit assessment program comprises the assessment instrument/s designed by the school to allow the students to demonstrate the unit objectives. The unit judgment of A–E is made using reporting standards.

Schools report student results for Unit 1 and Unit 2 to the QCAA as satisfactory (S) or unsatisfactory (U). Where appropriate, schools may also report a not rated (NR).

Units 3 and 4

Schools mark each of the three internal assessment instruments implemented in Units 3 and 4 using ISMGs.

Schools report a provisional mark by criterion to the QCAA for each internal assessment.

Once confirmed by the QCAA, these results will be combined with the result of the external assessment developed and marked by the QCAA.

The QCAA uses these results to determine each student's subject result as a mark out of 100 and as an A–E.

Units

Unit 1: Stakeholder-centred design

In Unit 1, students learn about and experience designing in the context of stakeholder-centred design. Fundamental to this context is the principle that design is a purposeful documented process undertaken by design professionals in response to identified needs and wants of a range of stakeholders. Students are introduced to the breadth of design professions, the design process and how designs of the past inform contemporary design practice.

Students engage with explore and develop phases of the design process. In the explore phase they will understand the influence of stakeholders and how the elements and principles of design have been used to create the design styles of past designers and applied in contemporary ways to suit stakeholders. Students will define problems, describe design problems and criteria. They will gain an experience of the nature and complexity of design problems, how designers work and the importance of users as stakeholders in the design process.

In the develop phase students will learn to devise ideas by applying the divergent thinking, sketching and low-fidelity prototyping skills used by designers. Convergent thinking will be used to evaluate and refine ideas. Students will make decisions to propose design concepts to a stakeholder audience.

Unit objectives

1. Describe the features that define design problems and design criteria.
2. Represent ideas and design concepts using schematic sketching, ideation sketching, and low-fidelity prototyping in the design process.
3. Analyse needs and wants using primary and secondary data about stakeholders and design information in the explore phase.
4. Devise ideas using divergent thinking in response to design problems in the develop phase.
5. Evaluate ideas against design criteria to make refinements in the develop phase.
6. Propose design concepts in response to design problems in the develop phase.
7. Make decisions about and use written and spoken communication with visual representations for specified stakeholders.

Subject matter

Topic 1: Designing for others

- Examine the breadth of the design profession, the types of designers, their scope of work and examples of their designs, including architects, digital media designers, fashion designers, graphic designers, industrial designers, interior designers and landscape architects.
- Use and compare models of the design processes, including
 - The double diamond (Design Council 2015)
 - Design Thinking for Educators (IDEO 2013)
 - The Field Guide to Human-Centered Design (IDEO 2015)
 - The Stanford d.school *Getting started with design thinking* (Hasso Plattner Institute of Design at Stanford University)
 - *Design Minds* (Duell et al. 2014).
- Recognise that designers are required to balance competing features, including
 - aesthetic, e.g. the impact on the senses; visual, feel and sound
 - cultural, e.g. established beliefs, values, traditions, laws and languages of a group of people
 - economic, e.g. costs, time, client expectations
 - social, e.g. fashions, trends, tastes, demographics
 - technical, e.g. use, function, sustainability, physical dimensions, ergonomics.
- Analyse design problems to identify that some are simple and some are complex; a problem
 - can be considered a simple problem (or ‘tame problem’) if it can be clearly defined and the expected outcome is known
 - can be considered a complex problem (or ‘wicked problem’) if it cannot be defined completely and has hard-to-predict outcomes.
- Recognise that stakeholders have specific needs and wants that must be considered; stakeholders include users, clients, audiences, other designers, other professionals and technicians.
- Define problems based on an analysis of
 - identified stakeholders’ aesthetic, cultural, economic, social and technical needs or wants
 - existing designs.
- Write a design problem that includes
 - a description of the aesthetic, cultural, economic, social and technical features related to stakeholder requirements
 - a list of constraints, e.g. teacher-specified limitations, available time, physical realities, legalities.
- Recognise that design criteria need to be identified to evaluate the effectiveness and quality of ideas and design concepts in a design process.

- Describe design criteria that integrate
 - requirements of stakeholders derived from the aesthetic economic, cultural, social and technical features of the problem
 - constraints
 - the principles of good design
 - innovative — what aspect of the design is new or unique?
 - useful — how well does the design fulfil its intended purpose?
 - aesthetic — in what way is the design pleasing to view, feel and hear and how does it positively affect humans?
 - accessible — how well does the design communicate its intended function without unnecessary elements, embellishment or decoration?
 - sustainable — how does the design respond to economic, social and ecological impacts
- Analyse how designers understand good design, including
 - the 10 principles of good design developed by Dieter Rams (Vitsœ 2017)
 - Good Design Australia evaluation criteria.
- Analyse existing designs to understand that designs are informed by the inspiration of past accomplishments
 - compare and contrast influential design styles, e.g. Art Deco, Bauhaus, Brutalism, Memphis, Minimalism, Modernism, Postmodernism
 - identify the influence of design styles across design professions
 - classify how influential designers from the past have used the elements and principles of design. Consider a range of designers, e.g. Marianne Brandt, Margaret Calvert, Lucienne Day, Zaha Hadid, Arne Jacobsen, Raymond Loewy, Charles Rennie Mackintosh, Gerrit Rietveld, Harry Seidler, Vivianna Torun Bülow-Hübe
 - form conclusions about how the elements and principles of design are used to define design styles.
- Analyse what makes classic designs distinguishable, iconic and timeless to understand the reasons for their success, considering how these designs
 - relate to principles of good design
 - defy obsolescence and transcend original function
 - maintain a constant presence in society over time
 - influence decisions to value form over function, e.g. developing new designs based on a classic design (retro-styling).
- Distinguish the relationship between aesthetics and how designers use the elements and principles of design.
- Apply the elements and principles of design
 - elements form the basic components of visual design, specifically space, line, colour, shape, texture, tone, form, proportion and scale
 - principles are ways of arranging or organising the elements, specifically balance, contrast, proximity, harmony, alignment, repetition and hierarchy.

- Demonstrate using ideation sketching, schematic sketching, physical low-fidelity prototyping and digital low-fidelity prototyping to
 - represent visual mental images
 - support the rapid devising and refining of design ideas
 - aid in the understanding of ideas, including
 - their critical and non-critical attributes such as functions, parts, colour, materials, proportion
 - the relationships between design information
 - understand the form, proportion and scale of ideas.
- Demonstrate using illustration sketching to communicate a refined design concept, including
 - a pictorial simulation of the appearance of an object as it would be seen by an observer who looks from a selected position
 - orthographic views that describe the form of a 3D object projected onto 2D planes .
- Analyse examples of design work to identify the elements of creativity (Torrance 1998)
 - fluency, the number of ideas; showing as many ideas as possible
 - flexibility, variety of ideas; creating choices; showing different ways to solve the problem; ideas are not all variations of the same central thought
 - originality, uniqueness of ideas; showing transformation or modification of something from common use
 - elaboration, details of ideas; showing credible attributes.
- Devise ideas that demonstrate fluency, flexibility, originality and elaboration using sketching and low-fidelity prototyping, the elements and principles of design and divergent thinking in response to design problems.
- Recognise divergent thinking is used to create a wide range of choices in the develop phase, e.g.
 - brainstorming — devising as many ideas as possible without critique
 - collaborating — sharing ideas and allowing others to edit, amend and add to the ideas
 - iterative thinking — using multiple cycles of idea development
 - modifying the shape or form
 - eliminating components to simplify
 - adapting the function
 - substituting a new component
 - combining with another idea
- Identify and interview a possible stakeholder to seek feedback on ideas.

- Evaluate the extent to which ideas match design criteria; use annotations associated with sketches to record evaluation considering
 - strengths
 - implications, e.g. if this change is adopted then a particular outcome could be expected
 - limitations
 - refinements that would improve ideas.
- Use convergent thinking to organise, structure and progress ideas to make decisions leading to a single best outcome such as
 - selecting the attributes identified as strengths
 - eliminating attributes identified as limitations
 - clustering ideas with common strengths.
- Make modifications and changes to ideas that improve the way in which they meet the design criteria; visually represent the refinements in subsequent versions of the ideas.
- Propose design concepts that best satisfy the design criteria.
- Maintain a record of design processes using visual and written modes to understand that documentation is required to support intellectual property rights of design ideas.
- Use illustrations with annotations or spoken notes to visually communicate design proposals to audiences.

Unit 2: Commercial design influences

In Unit 2, students will learn about and experience designing in the context of commercial design. Fundamental to commercial design is the principle that design is a commercial endeavour that requires designers to respond to the needs and wants of clients.

Students investigate the commercial nature of design when designing for a client. They examine how designers influence and are influenced by economics, society and culture.

Students use a collaborative design approach to develop design proposals for clients in consideration of economic, social and cultural factors. Students experience how designers work collaboratively in teams and the advantages of multiple perspectives on design problems. Students will learn to communicate design proposals to a virtual or live audience in the form of a pitch. The unit provides additional opportunities for students to develop sketching and low-fidelity prototyping skills as they select the most appropriate techniques to represent their ideas and design concepts.

Unit objectives

1. Describe the features that define commercial design problems and design criteria.
2. Represent ideas, design concepts and economic, social and cultural influences using schematic sketching, ideation sketching and low-fidelity prototyping in the design process.
3. Analyse needs and wants using primary and secondary data about clients, existing designs and economic, social and cultural influences in the explore phase.
4. Devise ideas using divergent thinking in response to design problems in the develop phase.
5. Evaluate ideas against design criteria to make refinements in the develop phase.
6. Propose design concepts in response to design problems in the develop phase.
7. Make decisions about and use written and spoken communication with visual representations for clients.

Subject matter

Topic 1: Responding to needs and wants

- Use client profiles that include
 - demographic information about a client
 - economic, social and cultural information
 - constraints that must be considered and accommodated when developing ideas such as available time, physical realities and legalities.
- Recognise the important role of the client as a stakeholder in commercial design.
- Analyse the economic, social and cultural factors that influence how designers respond to the expectation of clients, e.g.
 - design as a commercial endeavour that must balance costs, time and client expectations
 - desire for an increase or improvement in the standard of living and physical quality of life
 - fashions, trends and tastes
 - demographic groups that respond differently to designs
 - established beliefs, values and traditions of individuals, groups of people and countries
 - ethical influences, stances and generally acceptable designs and visual representations within a community
 - ethical design and moral responsibility of designers
 - protocols that describe appropriate ways of interacting with designers, communities and the cultural material of Aboriginal peoples and Torres Strait Islander peoples
 - historical perspectives.
- Analyse how designers and design styles have influenced changes in the economy, society and culture, e.g.
 - consumerism and consumer choice, the capacity to invent new markets and design for a 'gap in the market'
 - technological advances that remove economic limitations on possible designs
 - impacts on different socio-economic groups when new designs are introduced
 - designs facilitating how people live and engage in social activity
 - brand development and advertising as the communication of a value proposition in society
 - digital disruption.
- Investigate a client profile to understand needs and wants, and identify design problems considering secondary data about
 - client requirements and demographic information
 - the influence of economic, social and cultural factors
 - existing designs and the practices of contemporary designers.
- Represent information and analysis of clients' needs and wants using schematic sketching.

- Write a design brief to describe
 - the aesthetic, cultural, economic, social and technical features that define the problem
 - constraints
 - design criteria used to judge the quality of design concepts that integrates the requirements of the client the principles of good design.
- Document design information using visual, written and spoken modes.
- Recognise that professional designers work in teams because of the advantage of multiple perspectives on a design problem.
- Demonstrate the habits of effective design teams and understand how individual behaviour can promote these habits, specifically
 - clear and shared goals
 - mutual trust and support (safe space)
 - open communication
 - democratic processes
 - diverse skill sets and personality types.
- Organise design teams and team roles, e.g. coordinator, goal setter, troubleshooter, clarifier, opinion seeker, encourager.
- Recognise the importance of documenting individual and collective work when working within a team of designers.
- Demonstrate an understanding of design ethics (see the Design Institute of Australia's code of ethics, <http://www.design.org.au/code-of-ethics>), specifically designers' responsibility to
 - the client
 - other designers.
- Devise ideas that demonstrate fluency, flexibility, originality and elaboration using sketching and low-fidelity prototyping, the elements and principles of design and divergent thinking in response to commercial design problems.
- Use convergent thinking to refine the range of divergent ideas by
 - evaluating the strengths, limitations and implications of ideas against design criteria with annotations
 - making visual improvements to ideas in response to the outcome of the evaluation.
- Select and use the sketching and low-fidelity prototyping skills that best represent the ideas, and use sequences of representations to progress and improve ideas.
- Maintain visual and written or spoken record of individual contribution in design processes.
- Recognise the different kinds of intellectual property including copyright, patents, trademarks and designs and how they apply to the process of design (see IP Australia, www.ipaustralia.gov.au).
- Propose design concepts by synthesising multiple ideas and economic, social and cultural influences.
- Represent design concepts using the appropriate illustrations and low-fidelity prototyping to best represent the attributes of the design.

- Recognise that the acceptance of a new design concept requires the designer to consider the influence of economic, social and cultural issues from the client's perspective.
- Demonstrate how design teams use a spoken pitch to present design proposals to clients.
- Prepare presentations that pitch design proposals to clients, considering
 - client demographics
 - key attributes of the design proposal in regards to economic, social and cultural influences
 - that designs may have positive consequences in some communities and negative influences in others
 - the role of graphic designers in developing and promoting new designs through advertising and publicity
 - the benefits of building a positive user experience and appropriate messages
 - appropriate visual, written and spoken features.
- Work as a team to present visual and spoken (live or virtual) pitches of design proposals for identified clients.
- Reflect on the process of collaborative design and how well teams meet goals.

Unit 3: Human-centred design

In Unit 3, students learn about and experience designing in the context of human-centred design (HCD). Fundamental to HCD is the principle that a designer considers human needs and wants as a higher priority than other influences throughout the design process. The success of a design depends on effectively considering the attitudes, expectations, motivations and experiences of humans. Designers use observations, interviews and experiences to acquire data about people and seek to avoid making assumptions about their needs and wants.

Students will use designing with empathy as an approach to define problems by understanding and experiencing the needs and wants of a stakeholder. Students interact with a stakeholder throughout the process. Ideas are evaluated throughout the process using feedback from their stakeholder to determine suitability.

Unit objectives

1. Describe the features that define HCD problems and design criteria.
2. Represent ideas, design concepts and HCD information using schematic sketching, ideation sketching and low-fidelity prototyping in the design process.
3. Analyse needs and wants using primary data about stakeholders, secondary data about existing designs and designing with empathy knowledge in the explore phase.
4. Devise ideas using divergent thinking in response to HCD problems in the develop phase.
5. Evaluate ideas against design criteria to make refinements in the develop phase.
6. Propose HCD concepts in response to design problems in the develop phase.
7. Make decisions about and use written and spoken communication with visual representations for stakeholders.

Subject matter

Topic 1: Designing with empathy

- Recognise that in HCD
 - human needs and wants are the driving force behind the design
 - collaborating with people and demonstrating empathy will assist the designer to meet a person's needs and wants
 - the designer must act with integrity.
- Recognise design ethics, specifically a designer's responsibility to people (see the Design Institute of Australia's code of ethics, www.design.org.au/code-of-ethics).
- Apply an understanding of the influence of human attitudes, expectations, motivations and experiences on designing including
 - the four-pleasure framework
 - socio-pleasure — derived from social interaction. Good design can facilitate social interaction, e.g. jewellery that promotes social interaction by being a conversation starter
 - physio-pleasure — derived from the feel of a product during use, e.g. the smooth feel of a new mobile phone
 - psycho-pleasure — derived from the cognitive demands of using a product and the emotional reactions experienced when using it, e.g. a new software application that allows tasks to be accomplished quickly and easily
 - ideo-pleasure — derived from products that appeal to the person's values or beliefs, e.g. a biodegradable shopping bag
 - the attract/converse/transact (ACT) framework (Van Gorp & Adams 2012); designs can intentionally trigger emotional responses when all three elements are addressed
 - attract — aesthetics oriented
 - converse — interaction oriented
 - transact — function oriented.
- Apply an understanding of ergonomics when designing for humans, including
 - anthropometric data derived from the user
 - range of sizes versus adjustability
 - clearance, reach and adjustability.
- Apply an understanding of how designers consider ergonomics when designing to suit a particular person, including
 - the right size for comfortable use
 - use and possible misuse.
- Collect anthropometric data to inform design ideas, including
 - measuring primary data of people, e.g. length of average arms, average height, size of hand
 - percentiles and percentile ranges.

- Demonstrate designing with empathy techniques to understand attitudes, expectations, motivations and experiences of stakeholders. Techniques include
 - observations, e.g. spending time with people to see and hear them and to identify the needs and wants that have not been addressed by current products, services and environments
 - interviews, e.g. asking open ended 'why' questions and identifying people's likes and dislikes
 - experiences, e.g. simulating a person's physical impairment by a student wearing glasses to reduce vision or wearing gloves to limit grip and strength.
- Investigate needs and wants of stakeholders, including
 - primary data from stakeholders about attitudes, expectations, motivations and experiences
 - HCD information
 - existing designs.
- Use empathy maps to gain a deeper insight into the needs and wants of stakeholders. May include topics such as think, feel, see, hear, say, does, pain, gain
- Define problems and describe the relevant economic, social, cultural, aesthetic and technical features and constraints related to stakeholder requirements.
- Confirm conclusions with stakeholders to clarify understandings.
- Review how to identify and describe design criteria using
 - requirements of a stakeholder
 - the principles of good design, i.e. innovative, useful, aesthetic, accessible, sustainable.
- Describe design criteria by integrating the specific stakeholder requirements and principles of good design that can be used to judge the quality of ideas.
- Devise ideas that demonstrate fluency, flexibility, originality and elaboration using sketching and low-fidelity prototyping, the elements and principles of design and divergent thinking in response to HCD problems.
- Select and use the sketching and low-fidelity prototyping skills that best represent the ideas and facilitate the progression of the ideas showing form, function, attributes, modifications and refinements.
- Collaborate with a stakeholder to test and refine ideas against the design criteria.
- Review and amend the description of design problems and criteria based on knowledge about design problems identified through the development of ideas and collaboration with a stakeholder.
- Use convergent thinking to refine the range of divergent ideas by
 - evaluating the strengths, limitations and implications of ideas against design criteria with annotations
 - considering stakeholder feedback
 - making visual improvements to ideas in response to the outcome of the evaluation.
- Propose design concepts by synthesising the attributes of multiple ideas and HCD information about the stakeholder.
- Represent design concepts using the appropriate illustrations and low-fidelity prototyping to best represent the attributes of the design.

- Develop the skill of writing short succinct annotations on visual representations to record the evaluation of ideas.
- Maintain records using visual and written modes to demonstrate intellectual property rights of design ideas.
- Create communication including spoken live or virtual pitches and visual representations to communicate the suitability of design concepts for stakeholders.

Unit 4: Sustainable design influences

In Unit 4, students learn about and experience designing in the context of sustainable design. Fundamental to sustainable design is the principle that designers should create new designs that can be supported indefinitely in terms of their economic, social and ecological impact on the wellbeing of humans.

Students explore how designers identify design opportunities without working from needs and wants provided by stakeholders. Where Unit 3 focused on working closely with people to meet their needs and wants, this unit explores how stakeholders are encouraged to accept a designed solution they did not realise they needed prior to its development. Students learn that designers influence and are influenced by sustainability. They identify and explore opportunities to design products, services or environments to improve their sustainability.

Students will develop sustainable ideas and design concepts in response to opportunities identified. This includes applying a circular design approach to improve the sustainability of their designs. Students will communicate the sustainable attributes of design concepts to stakeholders and the opportunities that they represent.

Unit objectives

1. Describe the features and sustainable requirements that define sustainable design problems and design criteria.
2. Represent ideas, design concepts and sustainability information using schematic sketching and ideation sketching and low-fidelity prototyping in the design process.
3. Analyse design opportunities using data about existing designed solutions and sustainability information in the explore phase.
4. Devise ideas using divergent thinking in response to design problems in the develop phase.
5. Evaluate the strengths, limitations and implications of ideas against design criteria to make refinements in the develop phase.
6. Propose sustainable design concepts in response to design problems in the develop phase.
7. Make decisions about and use written communication with visual representations for stakeholders.

Subject matter

Topic 1: Responding to opportunities

- Identify a design opportunity.
- Recognise that design opportunities may be explored to
 - fill a gap in the market, a stakeholder or a group of people who are not using an existing product, service or environment
 - create a market for something that previously did not exist
 - improve human wellbeing.
- Analyse existing designs to understand how new ideas may come from extrapolation of existing designs or invention.
- Recognise design ethics, specifically designers'
 - responsibilities to the community
 - responsibilities to other designers (see the Design Institute of Australia's code of ethics, www.design.org.au/code-of-ethics).
- Recognise that sustainable design is influenced by decisions at a local, national and global level and is an approach to designing that seeks to support human wellbeing indefinitely while balancing the impact of economic, social and ecological sustainability
 - economic sustainability relates to the market-based private sector and the public and non-profit sectors. Designers' tasks include expanding or creating markets, and improving consumer appeal of designs and profitability
 - social sustainability relates to the functional, aesthetic and symbolic role of design and how it can support human wellbeing, e.g. quality of life, equality, diversity, social cohesion,
 - ecological sustainability relates to the issue that human systems are overwhelming nature's systems, impacting environmental conditions that support human wellbeing.
- Analyse examples of successful design opportunities, e.g. portable digital devices, digital games and apps, fashion items, and household products, by considering
 - launch — when a design is introduced to the market
 - growth — when the market has accepted the design and sales increase
 - maturity — when the sales have reached their peak
 - decline — when sales decline as the design reaches saturation point.
- Analyse the nature of the design life cycle, considering design, materials, energy, production, distribution, use, re-use, maintenance, recycle, waste.
- Analyse unsustainable design approaches that focus on a linear take, make and dispose model.
- Compare sustainable design approaches, e.g. circular design, eco-design, green design, sustainable fashion, sustainable architecture, sustainable graphic design, to identify similarities and differences.
- Investigate existing products, services and environments to identify how they could be redesigned to improve their economic, social or ecological sustainability and therefore create a new design opportunity.

- Analyse products, services and environments to identify design opportunities
 - determine the range of stakeholders that would be associated with a new or redesigned product, service or environment
 - identify aesthetic, cultural, economic, social and technical features related to the design opportunity.
- Define and describe
 - design problems based on identified features, constraints and the influence of economic, social and ecological sustainability
 - stakeholders
 - constraints
 - design criteria by integrating specific requirements and the principles of good design that can be used to judge the quality of design ideas.
- Maintain a record of designs using visual and written modes.
- Recognise that designers need to consider the whole life cycle of potential products, environments and services.
- Recognise that designs may affect economic, social and ecological sustainability in ways that are unpredictable and beyond the control of the designer such as software, materials and production decisions or how stakeholders use the designed solution.
- Recognise how design decisions contribute to planned obsolescence (to artificially limit the useful life), which is a key strategy in increasing consumption and economic growth.
- Predict how design decisions either encourage or discourage obsolescence including
 - function, e.g. new designs that do something better, therefore making the existing designs inferior
 - quality, e.g. the time taken to wear out or break
 - desirability, e.g. something is considered out of fashion by the arrival of newer and more exciting options.
- Recognise circular design includes
 - product as a service
 - product life extension
 - closed loop / take back
 - modularity
 - embedding intelligence
 - smart material choices.

- Apply circular design to devise ideas in response to sustainable design and redesign problems, e.g.
 - considering the future of a design beyond a single design life cycle for a specific user
 - creating more value by enabling multiple uses and users of a design
 - focusing on increasing positive impacts rather than reducing negative impacts
 - a product that could be continuously repurposed in a 'closed loop'
 - a service that could replace a product solution, e.g. a personal mobility service rather than a new car
 - a product or environment that could add value to the ecosystem, e.g. biodegradable products that break down, just as in nature
 - a service or environment that could be renewed, e.g. able to be upgraded, reprogrammed or refurbished for indefinite service.
- Devise ideas that demonstrate fluency, flexibility, originality and elaboration using sketching and low-fidelity prototyping, the elements and principles of design and divergent thinking in response to sustainable design problems.
- Select and use the sketching and low-fidelity prototyping skills that best represent the ideas and facilitate the progression of the ideas showing form, function, attributes, modifications and refinements.
- Consult with relevant stakeholders to test ideas and identify the potential of opportunities to
 - fill a gap in the market
 - create a market for something that previously did not exist
 - improve human wellbeing.
- Use convergent thinking to refine the range of divergent ideas by
 - evaluating the strengths, limitations and implications of ideas against design criteria and stakeholder feedback.
 - making refinements based on evaluation against design criteria with a focus on improving the economic, social and ecological sustainability of design ideas.
- Propose design concepts by synthesising multiple ideas and design information.
- Curate visual displays of design concepts by using illustrations that effectively demonstrate the sustainable features of design concepts; visual communication includes ideation sketches, illustrations, diagrams, photographs, motion graphics, interactive simulations and physical low-fidelity prototypes.
- Use annotations on the visual representations to record the evaluation of ideas and design concepts. Notes and comments may be spoken where it is not practical to write on visual representations.

Assessment

Internal assessment 1: Design challenge (20%)

Students document a period of focused design work to meet a deadline. They use the develop phase of the design process in response to an unseen stimulus.

Assessment objectives

2. Represent ideas and a design concept using ideation and/or schematic sketching in the develop phase.
4. Devise ideas using divergent thinking to demonstrate fluency, flexibility, originality and elaboration of ideas in response to a HCD problem in the develop phase.
5. Evaluate the strengths, limitations and implications of ideas against design criteria to make refinements in the develop phase for the stakeholder.
6. Propose a HCD concept in response to the HCD problem by synthesising ideas and stakeholder information in the develop phase.

Specifications

The teacher provides an examination that includes:

- a single question
- stimulus relating to Unit 3
- the requirement for students to
 - apply designing with empathy in the develop phase of the design process to
 - devise ideas
 - refine ideas based on an evaluation using design criteria
 - propose a design concept.
 - use sketches with annotations to represent ideas and a design concept.

Stimulus specifications

The teacher provides:

- a description of the features and requirements of a HCD design problem
- design criteria that can be used to judge the quality of the design ideas
- one A3 sheet of visual and written information to support the design problem including stakeholder information — attitudes, expectations, motivations and experiences.

Conditions

- This is an individual supervised task.
- Time allowed
 - Planning time: 15 minutes
 - Working time: 90 minutes
- The teacher must
 - not provide any guidance or assistance in completing the task
 - ensure the purpose of this technique is not compromised by the stimulus.
- Students must bring a black felt-tip pen and a set of coloured pens or pencils into the examination.

Mark allocation

Criterion	Assessment objectives	Marks
Devising	4	7
Evaluating and Proposing	5, 6	8
Representing	2	5
Total marks:		20

Instrument-specific marking guide

Devising	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • wide range of credible ideas perceptively devised using designing with empathy in response to the HCD problem that demonstrate flexibility in ways of responding, originality and detailed attributes 	6–7
<ul style="list-style-type: none"> • range of credible ideas purposefully devised using designing with empathy in response to the HCD problem that demonstrate originality and detailed attributes 	4–5
<ul style="list-style-type: none"> • range of credible ideas appropriately devised using designing with empathy in response to a HCD problem 	2–3
<ul style="list-style-type: none"> • ideas superficially devised or described in response to aspects of the HCD problem. 	1
The student response does not match any of the descriptors above.	0

Proposing and Evaluating	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • critical evaluation of the strengths, limitations and implications of ideas against design criteria • discerning refinement of ideas based on the evaluation and stakeholder information • coherent, logical and innovative HCD concept proposed by combining attributes of multiple ideas and stakeholder information in the develop phase 	7–8
<ul style="list-style-type: none"> • feasible evaluation of the strengths and limitations of ideas against design criteria • effective refinements of ideas in response to the evaluation • logical and credible HCD concept proposed by combining ideas and stakeholder information in the develop phase 	5–6
<ul style="list-style-type: none"> • superficial evaluation of the strengths and limitations of ideas against some design criteria • make changes to ideas related to the evaluation • simple HCD concept proposed by selecting ideas and stakeholder information in the develop phase 	3–4
<ul style="list-style-type: none"> • statements about ideas related to some design criteria • partial HCD concept proposed based on an idea. 	1–2
The student response does not match any of the descriptors above.	0

Representing	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> sophisticated representation of ideas and a design concept using fluent sequences of ideation and/or schematic sketching to progress understanding in the develop phase 	4–5
<ul style="list-style-type: none"> appropriate representation of ideas and a design concept using ideation and/or schematic sketching in the develop phase to progress understanding of ideas 	2–3
<ul style="list-style-type: none"> cursory representation of ideas and a design concept using unclear ideation and/or schematic sketching in the develop phase. 	1
The student response does not match any of the descriptors above.	0

Internal assessment 2: Project (30%)

Students document the design process undertaken in response to a stakeholder's needs and wants. They use a designing with empathy approach throughout the explore and develop phase.

Assessment objectives

1. Describe the features that define a HCD problem and design criteria based on the stakeholder's requirements and principles of good design.
2. Represent ideas, a design concept and HCD information using ideation sketching, schematic sketching and low-fidelity prototyping in the design process.
3. Analyse needs and wants using primary data about the stakeholder, secondary data about existing designs and designing with empathy knowledge in the explore phase.
4. Devise ideas using designing with empathy and divergent thinking to demonstrate fluency, flexibility, originality and elaboration of ideas in response to the HCD problem in the develop phase.
5. Evaluate the strengths, limitations and implications of ideas against design criteria and stakeholder feedback to make refinements in the develop phase for the stakeholder.
6. Propose a HCD concept in response to the HCD problem by synthesising ideas and stakeholder information in the develop phase.
7. Make decisions about and use written and spoken communication with visual representations to present a design brief and design proposal for the stakeholder.

Specifications

This task requires students to:

- identify a stakeholder
- apply designing with empathy in the explore and develop phases of the design process to
 - analyse the needs and wants of the stakeholder
 - write a design brief that describes a HCD problem and design criteria for the stakeholder
 - devise ideas in response to the HCD problem
 - evaluate ideas against the design criteria to make refinements
 - present a spoken and visual proposal for a design concept to the stakeholder demonstrating how the design concept satisfies the design criteria
- use sketching and prototyping skills to visually represent ideas, a design concept and HCD information.

It is recommended that this task is designed so that students can develop a response in approximately 20 hours of class time.

Conditions

- Students can develop their responses in class time and their own time.
- This is an individual task.

Response requirements

Design brief

Written: up to 400 words in one A3 page, including:

- a description of the HCD problem for the stakeholder
- design criteria
- supporting visual representations

Design proposal

Spoken and visual (virtual): up to 3 minutes, or signed equivalent, including:

- a visual presentation of the proposed design concept
- a spoken pitch for the stakeholder

Design process

Visual: up to 10 A3 pages, including:

- visual representation of the explore and develop phase of the design process
- up to 500 words of annotations on the visual representations
- evidence of engagement with the stakeholder in the explore and develop phases

Mark allocation

Criterion	Assessment objectives	Marks
Exploring	3, 1	10
Devising	4	5
Evaluating and Proposing	5, 6	7
Representing and Communicating	2, 7	8
Total marks:		30

Instrument-specific marking guide

Exploring	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • insightful analysis of needs and wants <ul style="list-style-type: none"> – using relevant primary data about the stakeholder, secondary data about existing designs and designing with empathy knowledge – to identify the significant aesthetic, cultural, economic, social and technical features and constraints of design problems and the relationships between them • discerning description of the <ul style="list-style-type: none"> – features and constraints that define a HCD problem – essential design criteria that integrate the stakeholder’s specific requirements associated with the features and constraints of the problem and the principles of good design 	9–10
<ul style="list-style-type: none"> • considered analysis of needs and wants <ul style="list-style-type: none"> – using relevant primary data about the stakeholder, secondary data about existing designs and designing with empathy knowledge – to identify valid features and constraints of design problems and the relationships between them • effective description of the <ul style="list-style-type: none"> – features that define a HCD problem – design criteria based on the stakeholder’s requirements and principles of good design 	7–8
<ul style="list-style-type: none"> • appropriate analysis of needs and wants <ul style="list-style-type: none"> – using primary data about the stakeholder, secondary data about existing designs and designing with empathy information – to identify some features, constraints of design problems and the relationships between them • adequate description of <ul style="list-style-type: none"> – the features that define a HCD problem – some design criteria based on the stakeholder’s requirements and principles of good design 	5–6
<ul style="list-style-type: none"> • superficial analysis of needs and wants using stakeholder information to identify partial features • superficial description of a HCD problem and some design criteria 	3–4
<ul style="list-style-type: none"> • statements about needs and/or wants • description of aspects of a HCD problem. 	1–2
The student response does not match any of the descriptors above.	0

Devising	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • wide range of credible ideas perceptively devised using designing with empathy in response to the HCD problem that demonstrate flexibility in ways of responding, originality and detailed attributes 	4–5
<ul style="list-style-type: none"> • range of credible ideas appropriately devised using designing with empathy in response to the HCD problem that demonstrate detailed attributes 	2–3
<ul style="list-style-type: none"> • ideas superficially devised or described in response to aspects of the HCD problem. 	1
The student response does not match any of the descriptors above.	0

Evaluating and Proposing	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • critical evaluation of the strengths, limitations and implications of ideas against design criteria • discerning refinements of ideas based on the evaluation and stakeholder feedback • coherent, logical and innovative HCD concept proposed by combining attributes of multiple ideas and stakeholder information in the develop phase 	6–7
<ul style="list-style-type: none"> • feasible evaluation of the strengths and limitations of ideas against design criteria • effective refinements to ideas in response to the evaluation • logical and credible HCD concept proposed by combining ideas and stakeholder information in the develop phase 	4–5
<ul style="list-style-type: none"> • superficial evaluation of the strengths and limitations of ideas against some design criteria • make changes to ideas related to the evaluation • simple HCD concept proposed by selecting ideas and stakeholder information in the develop phase 	2–3
<ul style="list-style-type: none"> • statements about ideas • partial HCD concept proposed based on an idea. 	1
The student response does not match any of the descriptors above.	0

Representing and Communicating	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • sophisticated representation of ideas, a design concept and HCD information using fluent sequences of ideation sketching, schematic sketching and low-fidelity prototyping to progress understanding in the design process • discerning decision-making about, and fluent use of <ul style="list-style-type: none"> – spoken features, design-specific vocabulary and visual elements and principles to present a design proposal for a live or virtual stakeholder audience – written conventions, features and design-specific language to present a design brief for the stakeholder 	7–8
<ul style="list-style-type: none"> • considered representation of ideas, a design concept and HCD information using proficient ideation sketching, schematic sketching and low-fidelity prototyping to progress understanding in the design process • effective decision-making about, and proficient use of <ul style="list-style-type: none"> – spoken features, design-specific vocabulary and visual elements and principles to present a design proposal for a live or virtual stakeholder audience – written conventions, features and design-specific language to present a design brief for the stakeholder 	5–6
<ul style="list-style-type: none"> • appropriate representation of ideas, a design concept and HCD information using ideation sketching, schematic sketching and low-fidelity prototyping in the design process • appropriate decision-making about, and use of <ul style="list-style-type: none"> – spoken features and visual elements and principles to present a design proposal – written features to present a design brief 	3–4
<ul style="list-style-type: none"> • cursory representation of ideas and information using unclear sketching in the design process • variable decision-making, and inconsistent use of <ul style="list-style-type: none"> – spoken features or visual elements – written conventions. 	1–2
The student response does not match any of the descriptors above.	0

Internal assessment 3: Project (25%)

Students document the design process undertaken in response to a design opportunity. They use circular design as an approach throughout the explore and develop phase to redesign a product, service or environment.

Assessment objectives

1. Describe the features that define a redesign problem and design criteria based on the sustainable requirements of the opportunity and the principles of good design .
2. Represent ideas, a sustainable design concept and sustainability information using schematic sketching, ideation sketching and low-fidelity prototyping in the design process .
3. Analyse design opportunities using data about existing designed solutions and sustainability information in the explore phase .
4. Devise ideas using circular design and divergent thinking to demonstrate fluency, flexibility, originality and elaboration of ideas in response to a redesign problem in the develop phase .
5. Evaluate the strengths, limitations and implications of ideas against design criteria and stakeholder feedback to make refinements in the develop phase .
6. Propose a sustainable design concept in response to a sustainable redesign problem by synthesising ideas and sustainability information in the develop phase .
7. Make decisions about and use written communication with visual representations to present a design brief and visual display of a design proposal for stakeholders .

Specifications

This task requires students to:

- identify a design opportunity to improve the sustainability of a product, service or environment
- apply circular design in the explore and develop phases of the design process to
 - analyse the design opportunity
 - write a design brief that describes a redesign problem and design criteria
 - devise ideas using circular design in response to the redesign problem
 - evaluate ideas against the design criteria to make refinements
 - present a visual proposal of a sustainable design concept for stakeholders demonstrating how the design concept satisfies the design criteria
- use sketching and prototyping skills to visually represent ideas, a design concept and sustainable information.

It is recommended that this task is designed so that students can develop a response in approximately 15 hours of class time.

Conditions

- Students can develop their responses in class time and their own time.
- This is an individual task.

Response requirements

Design brief

Written: up to 500 words in one A3 page, including:

- a description of the redesign problem
- design criteria
- supporting visual representations

Design proposal

Visual: one A3 page, including:

- a visual representation of the proposed design concept for stakeholders
- labels
- how the design concept satisfies the design criteria

Design process

Visual: up to eight A3 pages, including:

- visual representation of the explore and develop phases of the design process
- up to 400 words of annotations on the visual representations
- evidence of engagement with stakeholders

Mark allocation

Criterion	Assessment objectives	Marks
Exploring	3, 1	7
Devising	4	5
Evaluating and Proposing	5, 6	5
Representing and Communicating	2, 7	8
Total marks:		25

Instrument-specific marking guide

Exploring	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • insightful analysis of redesign opportunities <ul style="list-style-type: none"> – using relevant data about existing designed solutions and economic, social and ecological sustainability information – to identify the significant aesthetic, cultural, economic, social and technical features and constraints of redesign problems and the relationships between them • discerning description of the <ul style="list-style-type: none"> – features and constraints that define a sustainable redesign problem – essential design criteria that integrate the specific requirements of the opportunity associated with the features and constraints of the problem and the principles of good design 	6–7
<ul style="list-style-type: none"> • appropriate analysis of sustainable redesign opportunities <ul style="list-style-type: none"> – using data about existing designed solutions and economic, social and ecological sustainability information – to identify features and constraints of redesign problems and the relationships between them • adequate description of <ul style="list-style-type: none"> – the features that define a sustainable redesign problem – design criteria based on the requirements of the opportunity and the principles of good design 	4–5
<ul style="list-style-type: none"> • superficial analysis of sustainable redesign opportunities to identify partial features of redesign problems • superficial description of a sustainable redesign problem and some design criteria 	2–3
<ul style="list-style-type: none"> • statements about opportunities • description of aspects of a redesign problem. 	1
The student response does not match any of the descriptors above.	0

Devising	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • wide range of credible ideas perceptively devised using circular design in response to the sustainable redesign problem that demonstrate flexibility in ways of responding, originality and detailed attributes 	4–5
<ul style="list-style-type: none"> • range of credible ideas appropriately devised using circular design in response to the sustainable redesign problem that demonstrate detailed attributes 	2–3
<ul style="list-style-type: none"> • ideas superficially devised or described in response to aspects of the sustainable redesign problem. 	1
The student response does not match any of the descriptors above.	0

Evaluating and Proposing	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • critical evaluation of the strengths, limitations and implications of ideas against design criteria • discerning refinement of ideas based on the evaluation and stakeholder feedback • coherent, logical and innovative sustainable design concept proposed by combining attributes of multiple ideas and sustainability information in the develop phase 	4–5
<ul style="list-style-type: none"> • feasible evaluation of the strengths and limitations of ideas against design criteria • make changes to ideas related to the evaluation • credible sustainable design concept proposed by combining ideas and sustainability information 	2–3
<ul style="list-style-type: none"> • statements about ideas • partial sustainable concept proposed based on an idea. 	1
The student response does not match any of the descriptors above.	0

Representing and Communicating	Marks
The student response has the following characteristics:	
<ul style="list-style-type: none"> • sophisticated representation of ideas, a sustainable design concept and sustainability information using fluent sequences of schematic sketching, ideation sketching and low-fidelity prototyping to progress understanding in the design process • discerning decision-making about, and fluent use of <ul style="list-style-type: none"> – illustrations and/or low-fidelity prototypes with written features to present a visual display that promotes the sustainable design concept for relevant stakeholders – written conventions, features and design-specific language to present a design brief for relevant stakeholders 	7–8
<ul style="list-style-type: none"> • considered representation of ideas, a sustainable design concept and sustainability information using proficient schematic sketching and ideation sketching and low-fidelity prototyping to progress understanding in the design process • effective decision-making about, and proficient use of <ul style="list-style-type: none"> – illustrations and/or low-fidelity prototypes with written features to present a visual display that promotes the sustainable design concept for stakeholders – written conventions, features and design-specific language to present a design brief for stakeholders 	5–6
<ul style="list-style-type: none"> • appropriate representation of ideas, a sustainable design concept and sustainability information using schematic sketching and ideation sketching and low-fidelity prototyping in the design process • appropriate decision-making about and use of <ul style="list-style-type: none"> – illustrations and/or low-fidelity prototypes with written features to present a visual display that promotes the sustainable design concept – written conventions and features to present a design brief 	3–4
<ul style="list-style-type: none"> • cursory representation of ideas and information using unclear sketching in the design process • variable decision-making about, and inconsistent use of <ul style="list-style-type: none"> – illustrations and/or low-fidelity prototypes to show a design concept – written conventions used in a design brief. 	1–2
The student response does not match any of the descriptors above.	0

External assessment: Examination — extended response (25%)

External assessment is developed and marked by the QCAA. The external assessment in Design is common to all schools and administered under the same conditions, at the same time, on the same day.

Students document a period of focused design work to meet a deadline. They use the develop phase of the design process in response to stimulus.

Assessment objectives

2. Represent ideas, and a sustainable design concept using schematic sketching and ideation sketching in the develop phase.
4. Devise ideas using divergent thinking to demonstrate fluency, flexibility, originality and elaboration of ideas in response to a design problem in the develop phase.
5. Evaluate the strengths, limitations and implications of ideas against design criteria and make refinements.
6. Propose a sustainable design concept in response to a design problem by synthesising ideas and sustainability information in the develop phase.

Specifications

This examination:

- consists of a single question with stimulus relating to Unit 4
- may ask students to
 - apply the develop phase of the design process to
 - devise ideas
 - refine ideas based on an evaluation using design criteria
 - propose a design concept
 - use sketches with annotations to represent ideas and a design concept.

Stimulus specifications

The QCAA provides:

- a description of the features and sustainable requirements of a design problem
- design criteria that can be used to judge the quality of the design ideas
- visual and written information to support the design problem.

Conditions

- Time allowed
 - Planning time: 15 minutes
 - Working time: 120 minutes
- Students must bring a black felt-tip pen and a set of coloured pens or pencils into the examination.

Glossary

The syllabus glossary is available at www.qcaa.qld.edu.au/downloads/senior-qce/common/snr_glossary_cognitive_verbs.pdf.

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Version history

Version	Date of change	Information
1.0	January 2024	Released for familiarisation and planning (with implementation starting in 2025)

