

Computer Graphics and Design - Foundation

LEVEL 2	15 TCE CREDIT POINTS
COURSE CODE	CGD215118
COURSE SPAN	2018 — 2025
READING AND WRITING STANDARD	NO
MATHEMATICS STANDARD	NO
COMPUTERS AND INTERNET STANDARD	YES

This course is current for 2024.

Computer Graphics and Design - Foundation Level 2 provides applied learning opportunities for learners with an interest in computer graphics who are looking to foster a career within design-based industries and/or wish to prepare for further study in Computer Graphics and Design Level 3

It allows learners to develop a practically based understanding of form and functional design contexts using computer graphics and associated digital technologies.

Course Description

Computer Graphics and Design - Foundation provides an introduction to the use of the design process and principles to create digital solutions. Design principles and processes must underpin the development of digitally created outcomes and solutions. Design solutions must be arrived at using a variety of expressive techniques including written, hand drawn and digital means.

In addition to design project work undertaken by learners, there will be a focus on the formal delivery of the design component in relation to principles and process (for example via structured practical lessons and tutorials) in conjunction with digital content areas. Design projects will focus on implementing the digital skills developed through this course, and will gradually develop learners' understanding and skills to work more independently.

Connections may be made with designers working in a diverse range of contexts. This may take the form of case studies, guest speakers and excursions.

Rationale

Computer Graphics and Design - Foundation Level 2 provides applied learning opportunities for learners with an interest in computer graphics who are looking to foster a career within design-based industries and/or wish to prepare for further study in Computer Graphics and Design Level 3. It allows learners to develop a practically based understanding of form and functional design contexts using computer graphics and associated digital technologies. Computer Graphics and Design - Foundation Level 2 engages learners in solving design challenges and presenting their ideas or solutions as digital graphic solutions. Design projects allow learners: to demonstrate their skills and understandings of design principles and processes; to understand problems; propose possibilities; and to develop creative solutions.

Computer Graphics and Design - Foundation provides potential for the engagement of integrated learning opportunities and the capacity to develop design thinking skills to effectively transfer knowledge and understanding across disciplines. The applied design thinking and problem solving focus of this course helps equip learners to develop skills essential for the digital age.

Aims

Computer Graphics and Design - Foundation aims to develop skills and knowledge in the areas of:

- design thinking and project implementation
- visual communication
- the use of digital graphics.

Learning Outcomes

On successful completion of this course, learners will be able to:

1. apply design process, principles and practices
2. generate and communicate ideas and information in a variety of ways
3. use practical skills to creatively solve problems
4. apply key design standards and conventions when using digital technologies
5. outline fundamentals of contemporary digital technologies
6. plan, organise, undertake and appraise a variety of design projects
7. outline relationships between hardware and software systems and computer graphics.

Pathways

Learners who have completed prior study in the area of Australian Curriculum Technologies band 9-10, or other design based courses will be well placed to engage in Computer Graphics and Design - Foundation, however there are no mandatory entry requirements to this course.

On successful completion of this course, learners will have attained the knowledge and skills to progress to Computer Graphics and Design Level 3 and/or entry level vocational education and training (VET) pathways in the areas such as: engineering; building design; computing; visual arts; and design.

Resource Requirements

Providers of this course will ensure learners have access to appropriate industry standard graphics software applications and suitable hardware to enable the efficient operation of such applications.

Course Size And Complexity

This course has a complexity level of 2.

At Level 2, the learner is expected to carry out tasks and activities that involve a range of knowledge and skills, including some basic theoretical and/or technical knowledge and skills. Limited judgment is required, such as making an appropriate selection from a range of given rules, guidelines or procedures. VET competencies at this level are often those characteristic of an AQF Certificate II.

This course has a size value of 15.

Relationship To Other TASC Accredited And Recognised Senior Secondary Course

Computer Graphics and Design - Foundation Level 2 does include an introduction to design thinking and computer graphics skills and knowledge which provides a foundation for learners who wish to subsequently study Computer Graphics and Design Level 3.

Computer Graphics and Design - Foundation Level 2 is underpinned by design thinking which appears in other TASC Design and Technology courses including Design and Production Level 2, Housing and Design Level 3, Technical Graphics Foundation Level 2, Technical Graphics 3 and Computer Graphics and Design Level 3. While learners who are studying more than one Design and Technology course either sequentially or concurrently may have some advantages in dealing with familiar terms and integrating broad concepts, the depth, contextualisation of content and application vary.

Course Requirements

Work submitted for assessment must be:

- produced over the duration of one calendar year
- be unique to this course
- not be work submitted for assessment in any other course.

Learners must complete the work requirements as listed in the Course Content section of this document. Learners must complete Unit 1 first. Units 2-4 may be completed in any order. Unit 5 - the elective content – must be completed last.

Course Content

All Units are compulsory. Learners must complete Unit 1 first. Units 2-4 may be completed in any order. Unit 5 - the elective content – must be completed last.	
Unit 1 - Design Foundation 30 hours	
Unit Outline	Design underpins all computer graphics applications. In this Unit learners develop an understanding of design processes and how this is applied to develop design proposals and solutions. The importance of working to a design brief and the role of a client within this process is pivotal. Learners will develop visual communication skills to communicate their ideas and understandings through the process of design development and the presentation of a final product.
Key Knowledge and skills	• design elements and principles • design process (brief, research and concept development, production appraisal) • visual communication skills including sketching and graphic communication including orthographic and isometric drawing • techniques for recording and reflecting on decision making • design and client interaction • aesthetics and function in design • the role of visual communication in design • introduction to sustainable design in society.
Work requirements	One presentation demonstrating the design process and using this to address a design problem. This presentation could take the form of a poster, oral or digital presentation or written document but must include evidence of understanding the process and applying this using text, drawing and design. 1000 words, 3 minute presentation or A2 poster. The learning from this Unit is also embedded and assessed in the project produced using skills developed and work requirements specified in Unit 2.

Design projects allow learners to: demonstrate their skills and understandings of design principles and processes; to understand problems; propose possibilities; and devise creative solutions.

The following Units 2-5 are the content basis for working within a field of design. Learners require a basic understanding of a number of areas and must study the four compulsory topics and one from the optional section. Approximately 30 hours should be spent on each topic. It is expected that computer graphics hardware and software systems theory components are taught during - and embedded within - the learner's practical work.

Unit 2 - Digital Imaging 30 hours	
Key Knowledge and skills	This content area involves learning the processes and systems of raster and vector based graphics to develop functional design solutions. It incorporates understanding of: • different file types • systems and tools. These are used to produce 2D graphics for particular functional design contexts.
Work requirements	One design project focusing on digital imaging. Project size - 800 - 1200 words, including background research graphics, design sketching and annotated screen shots of production process.

Unit 3 - 3D Modelling 30 hours	
Key Knowledge and skills	This content area involves learning the foundation processes and systems of 3D modelling to develop design solutions. It incorporates techniques such as: • polygon • spline and • digital sculpting. These techniques are used to produce solid or shell based modelling solutions.
Work requirements	One design project focusing on 3D modelling. Project size - 800 - 1200 words, including background research graphics, design sketching and annotated screen shots of production process.

Unit 4 - Animation 30 hours	
Key Knowledge and skills	This content area involves building and understanding of animation to develop design solutions. It incorporates the processes and systems required to generate animation including techniques such as: • keyframing • tweening This will also incorporate the addition of narrative and sound recording.
Work requirements	One design project focusing on Animation. Project size - 800 - 1200 words, including background research graphics, design sketching and annotated screen shots of production process.

Unit 5 - Computer Graphics and Digital Elective Topic 30 hours (One must be selected)	
Key Knowledge and skills	Select <i>one</i> topic from the electives below: <i>EITHER</i> 1. Interactive design This content area involves learners developing an understanding of interactive design technologies and how this can inform the design of preferred future options. There is a focus on embedded and wearable technologies. Learners will develop their own design concepts for future interactive design. <i>OR</i> 2. Solid modelling This content area involves understanding key components of systems involved in both CAD and CAM for digital based fabrications. Learners will work with digital modelling. They will look at the place of modelling for purpose and co-customisation. <i>OR</i> 3. Video and Motion Graphics Learners will use tools to capture and share video using mobile devices and editing software. This will include the use of simple 3D content and include the production of video and motion graphics. Mobile platforms such as Photoshop Express, Adobe Spark and youtube can be used. <i>OR</i> 4. Asset development

	This content area focuses on the role of assets within computer graphics. Learner will acquire, transform and customise assets designed by others, and design their own for specific purposes.
Work requirements	One design project focusing on the elective studied. The project brief is to be learner driven. Project size 1000-1500 words, including background research graphics, design sketching and annotated screen shots of production process

Work Requirements

At least four design projects will be undertaken, one from each of Units 2, 3 and 4 and one from the option selected in Unit 5. The design project process is specified in Appendix 1 and the scope specified in the course content.

While maintaining focus on software skill development, the knowledge of the design process and the application of design elements and principles appropriate to the design context underpin the learning activity.

Unit	Work Requirement
Unit 1 Design Foundation	1. Design process presentation
Unit 2 Digital Imaging	2. One design project
Unit 3 3D Modelling	3. One design project
Unit 4 Animation	4. One design project
Unit 5 Computer Graphics and Digital Elective	5. One design project Select one from the available options: • Interactive design • Solid modelling & 3D digital fabrication • Video, motion graphics and post-production editing • Asset development, game design and production

Assessment

Criterion-based assessment is a form of outcomes assessment that identifies the extent of learner achievement at an appropriate end-point of study. Although assessment – as part of the learning program – is continuous, much of it is formative, and is done to help learners identify what they need to do to attain the maximum benefit from their study of the course. Therefore, assessment for summative reporting to TASC will focus on what both teacher and learner understand to reflect end-point achievement.

The standard of achievement each learner attains on each criterion is recorded as a rating 'A', 'B', or 'C', according to the outcomes specified in the standards section of the course.

A 't' notation must be used where a learner demonstrates any achievement against a criterion less than the standard specified for the 'C' rating.

A 'z' notation is to be used where a learner provides no evidence of achievement at all.

Providers offering this course must participate in quality assurance processes specified by TASC to ensure provider validity and comparability of standards across all awards. To learn more, see TASC's [quality assurance](#) processes and [assessment](#) information.

Internal assessment of all criteria will be made by the provider. Providers will report the learner's rating for each criterion to TASC.

Quality Assurance Process

Each provider will submit bodies of learners' work sufficient to allow an assessment against a nominated range of criteria and the overall award to an annual review meeting organised by TASC. The work, while not necessarily be fully resolved, will be assessed by the provider against the range of nominated assessment criteria and the overall award. TASC will give each provider guidance regarding the selection of learners and the nominated criteria.

Each body of work that providers submit to the meeting will include sufficient and appropriate material for judgements to be made about the learner's standard of numeracy. The review meeting will give advice regarding the provider's interpretation and application of the selected criteria's standards to the evidence of student work. Providers are expected to act on this advice.

TASC may require providers to supply further samples of individual learners' work to determine that standards have been applied appropriately and/or undertake audits. The nature and scope of such requirements will be risk-based.

Additionally, TASC may select to undertake scheduled audits of this course (Provider Standards 1, 2, 3 & 4), and of work requirements.

Criteria

The assessment for Computer Graphics and Design – Foundation Level 2 will be based on the degree to which the learner can:

1. collect, organise, and apply information
2. use a design process in response to a brief
3. generate and communicate ideas using a variety of graphic techniques
4. identify and utilise elements and principles of design
5. appraise design solutions
6. describe features of contemporary computer graphics systems
7. use digital technologies to create content.

Standards

Criterion 1: collect, organise, and apply information

The learner:

Rating A	Rating B	Rating C
collects a broad range of computer graphics and design ideas and information that is relevant to a task	collects a range of computer graphics and design ideas and information that is relevant to a task	collects a limited range of computer graphics and design ideas and information that is related to a task
organises computer graphics and design information from a wide range of sources into logical patterns or points of view	organises computer graphics and design information from a range of sources into patterns or points of view	organises computer graphics and design information from a limited range of sources
appraises and applies accurate, relevant and detailed computer graphics and design information to projects	applies accurate and relevant computer graphics and design information to projects	applies computer graphics and design information to projects
accurately records sources of information.	records sources of information.	uses basic referencing/citation methods as directed.

Explanation of Criterion 1

This criterion is used to assess all work samples within the course whether they are research/theory based assignments or practical computer graphic design tasks. A learner's understanding may be illustrated through the preparation and production of presentations, the solving of design briefs and other assignment based tasks.

For example: the action of interpreting a brief or task; undertaking research; refining the information or concepts; producing an outcome; and assessment of the outcomes by self, teacher and/or peers.

Criterion 2: use a design process in response to a brief

The learner:

Rating A	Rating B	Rating C
produces supporting material communicating a wide range of graphic forms* that has supported the generation of design ideas, development of possible solutions and a strong relationship with the design brief	produces supporting material using a range of graphic forms* that reflect the generation of design ideas and development of possible solutions	produces supporting material using a limited range of appropriate graphic forms* that reflect the generation of design ideas
documents a wide range of ideas and appraises these ideas by reflecting on a design brief, aims and other related design principles to produce an effective design solution	documents a range of ideas and appraises these with reference to a design brief and related design principles to produce a design solution	documents a limited range of ideas in response to a design brief to produce a design solution
tests and trials ideas and techniques to develop designs and provides reasoning for decisions when designing solutions	undertakes limited trials of designs and provides some reasoning for decisions when designing solutions	records decisions when designing solutions
adjusts and modifies initial design ideas to develop design solutions that meet the requirements of a brief	adjusts and modifies initial design ideas to develop design solutions that meet most of the requirements of a brief	makes a limited range of changes or improvements when developing design solutions
uses systematic and iterative processes to meet the needs and considerations within constraints identified in a brief.	meets needs and considerations within constraints identified in a brief.	meets key needs and considerations identified in a brief.

*Graphic forms may include, but are not limited to: sketches; drawings, production systems flow charts; orthographic projections; working drawings; colour images; 3-dimensional models; prototypes; and written annotations.

Explanation of Criterion 2

This criterion is used to assess the performance a learner displays in problem solving through the application of the design process with the application of digital technologies. Problems

may be intentional and unintentional. For example, problems may be in relation to understanding hardware / software routines or difficult phases within the design process. A learner can provide evidence via teacher observation, personal reflection documents and folios that include personal and teacher appraisal.

Criterion 3: generate and communicate ideas using a variety of graphic techniques

The learner:

Rating A	Rating B	Rating C
uses a range of techniques to effectively communicate complex design ideas	uses a range of techniques to communicate design ideas	uses a limited range of techniques to communicate design ideas
effectively communicates accurate visual design content and ideas using appropriate conventions	communicates visual design content and ideas using appropriate conventions	communicates basic visual design content and ideas
correctly uses a wide range of specialised terms	correctly uses a range of specialised terms	correctly uses a limited range of specialised terms
generates and communicates design concepts based upon the creative exploration of, and experimentation with, a wide range of potential solutions.	generates and communicates design concepts based upon the exploration of, and experimentation with, a range of potential solutions.	generates and communicates design concepts based upon an exploration of a limited range of potential solutions.

Explanation of Criterion 3

This criterion is used to assess the degree to which a learner can communicate design-based ideas using a range of methods and technologies. Significant emphasis should be placed on a variety of drawing techniques including orthographic, isometric and perspective drawing. The ability to develop a design concept on paper prior to using a range of computer-based technologies is an important skill set. Communication of design concepts using a range of 2D and 3D drawing, modelling, animating and rapid prototyping software, and hardware options will be used where appropriate.

Criterion 4: identify and utilise elements and principles of design

The learner:

Rating A	Rating B	Rating C
identifies and describes a broad range of design elements and principles	identifies and describes a range of design elements and principles	identifies a limited range of design elements and principles
correctly uses a wide range of specialised terminology relating to elements and principles of design	correctly uses a range of specialised terminology relating to elements and principles of design	uses a limited range of specialised terminology relating to elements and principles of design
effectively applies a wide range of design principles and elements to create computer graphics for specific purposes.	applies a range of design principles and elements to create computer graphics.	uses a limited range of design principles and elements to create computer graphics.

Explanation of Criterion 4

This criterion is used to assess the degree to which a learner can employ the elements and principles of design when solving design problems in a range of contexts. The application of elements and principles appropriate to the design context are an important consideration.

For example, a scenario may be to design a consumer product. The solution to such a problem may be found by applying the appropriate rules of form, function and aesthetics.

A learner's understanding may be demonstrated by various means including: the manipulation of design principles and elements in the production of a design solution; and verbal or written discussions.

Criterion 5: appraise design solutions

The learner:

Rating A	Rating B	Rating C
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reflects – orally and in writing – on plans, implementation, outcomes and own performance and uses recommendations to inform future actions	reflects – orally and in writing – on plans, implementation, outcomes and own performance and makes recommendations for future actions	reflects – orally and in writing – on plans, implementation, outcomes and own performance and makes limited suggestions for improvements
appraises the suitability and appropriateness of solution(s) in meeting the success criteria for a brief, and identifies competing design factors	appraises the suitability and appropriateness of solution(s) in meeting standards required by a brief	makes some realistic conclusions about suitability and appropriateness of solution(s) in meeting standards required by a brief
assesses the quality of own work undertaken in relation to the requirements of the brief	describes the quality of own work undertaken in relation to the requirements of the brief	makes valid observations regarding the quality of own work undertaken
assesses the effectiveness of the techniques and processes used within own work, in relation to the requirements of the brief and suggests improvements in future tasks.	describes the effectiveness of the techniques and processes used within own work, in relation to the requirements of the brief.	makes valid observations regarding the effectiveness of techniques and processes used within own work.

Explanation of Criterion 5

This criterion is used to assess the degree to which a learner can appraise and refine design solutions during the application of the design process. A learner's understanding may be demonstrated by various means including; addressing the stages of design in the production of design solutions, and verbal or written discussions.

Criterion 6: describe features of contemporary computer graphics systems

The learner:

Rating A	Rating B	Rating C
identifies and accurately describes a wide variety of ways in which computer graphics systems are used to produce design solutions	identifies and describes a variety of ways in which computer graphics systems are used to produce design solutions	identifies ways in which computer graphics systems are used to produce design solutions
compares relative effectiveness of some computer graphics systems in the production of design solutions		
accurately describes how hardware configuration are used in order to create effective, complex design solutions	describes how hardware configuration contributes to effective design solutions	identifies ways in which hardware configuration contributes to design solutions
accurately describes how features of software applications are used in order to create effective, complex design solutions	describes how features of software applications are used in order to create effective design solutions.	identifies ways which features of software applications are used to create design solutions.
appraises relative effectiveness of some hardware configurations and features of software applications in the creation of design solutions.		

Explanation of Criterion 6

This criterion is used to assess the degree to which a learner can demonstrate an understanding of contemporary computer graphics systems across a range of design contexts in order to produce design solutions. It is also used to assess the degree to which learners can demonstrate how the components of software applications and the configuration of computer graphic hardware systems are related to the effective and efficient development of design solutions.

For example, learners may consider how light and shade in a photograph needs to be considered when matching a 3D object into a photograph. Understanding of systems used in computer graphics to replicate this light and shade is required to successfully integrate the 3D object with the photograph.

A learner's understanding can be illustrated through the preparation and production of presentations, the production of design projects and other assignment based tasks.

Criterion 7: use digital technologies to create content.

The learner:

Rating A	Rating B	Rating C
selects and uses a wide range of digital technologies and techniques to develop design solutions	selects and uses a range of digital technologies and techniques to develop design solutions	selects and uses a limited number of digital technologies and techniques to develop design solutions
develops complex, effective digital design solutions	develops effective digital design solutions	develops basic, functional digital design solutions
correctly and accurately applies appropriate standards and conventions in the completion of design tasks	applies standards and conventions in the completion of design tasks	applies key standards and conventions as directed in the completion of design tasks
uses and maintains technologies in accordance with established safety procedures.	uses and maintains technologies in accordance with established safety procedures.	uses and maintains technologies in accordance with established safety procedures.

Explanation of Criterion 7

This criterion is used to assess the degree to which a learner can create design solutions using a range of computer graphic techniques and software applications. It enables the learner to address standards and conventions across a range of design contexts. This could be as simple as knowing and applying appropriate screen resolution and frame rate settings to an animation. A learner's understanding may be demonstrated by via the completion of teacher directed or learner directed design tasks.

Qualifications Available

Computer Graphics and Design - Foundation Level 2 (with the award of):

EXCEPTIONAL ACHIEVEMENT

HIGH ACHIEVEMENT

COMMENDABLE ACHIEVEMENT

SATISFACTORY ACHIEVEMENT

PRELIMINARY ACHIEVEMENT

Award Requirements

The final award will be determined by the Office of Tasmanian Assessment, Standards and Certification from 7 ratings.

The minimum requirements for an award in Computer Graphics and Design - Foundation Level 2 are as follows:

EXCEPTIONAL ACHIEVEMENT (EA)

6 'A' ratings, 1 'B' rating

HIGH ACHIEVEMENT (HA)

3 'A' ratings, 3 'B' ratings, 1 'C' rating

COMMENDABLE ACHIEVEMENT (CA)

3 'B' ratings, 3 'C' ratings

SATISFACTORY ACHIEVEMENT (SA)

5 'C' ratings

PRELIMINARY ACHIEVEMENT (PA)

3 'C' ratings

A learner who otherwise achieves the rating for a CA (Commendable Achievement) or SA (satisfactory Achievement) award but who fails to show any evidence of achievement in one or more criteria ('Z' notation) will be issued with a PA (Preliminary Achievement) award.

Course Evaluation

The Department of Education's Curriculum Services will develop and regularly revise the curriculum. This evaluation will be informed by the experience of the course's implementation, delivery and assessment.

In addition, stakeholders may request Curriculum Services to review a particular aspect of an accredited course.

Requests for amendments to an accredited course will be forwarded by Curriculum Services to the Office of TASC for formal consideration.

Such requests for amendment will be considered in terms of the likely improvements to the outcomes for learners, possible consequences for delivery and assessment of the course, and alignment with Australian Curriculum materials.

A course is formally analysed prior to the expiry of its accreditation as part of the process to develop specifications to guide the development of any replacement course.

Course Developer

The Department of Education acknowledges the significant leadership of Michael Dowling, Philip Goss and Melinda Williams in the development of this course.

Expectations Defined By National Standards

There are no statements of national standards relevant to this course.

Accreditation

The accreditation period for this course has been renewed from 1 January 2022 until 31 December 2025.

During the accreditation period required amendments can be considered via established processes.

Should outcomes of the Years 9-12 Review process find this course unsuitable for inclusion in the Tasmanian senior secondary curriculum, its accreditation may be cancelled. Any such cancellation would not occur during an academic year.

Version History

Version 1– Accredited on 19 May for use from 1 January 2018. This course replaces Computer Graphics and Design - Foundation (CGD215113) that expired on 31 December 2017.

Accreditation renewed on 22 November 2018 for the period 1 January 2019 until 31 December 2021.

Version 1.a - Renewal of Accreditation on 14 July 2021 for the period 31 December 2021 until 31 December 2024, without amendments.

Appendix 1

APPLYING A DESIGN PROCESS WITHIN COMPUTER GRAPHICS AND DESIGN - FOUNDATION

Learners will respond to design scenarios by applying a design process. This process is an iterative process which uses a design brief, is informed by research and impacting factors and documents the development and presentation of a computer graphics solution.

The application of the design process within a Computer Graphics and Design - Foundation project is expressed below. Depending on the particular project, the design process often contains further refinement and circulating between the ideations, investigations and challenges. Appraisal occurs along the way, especially during refinement and final consideration of the project.

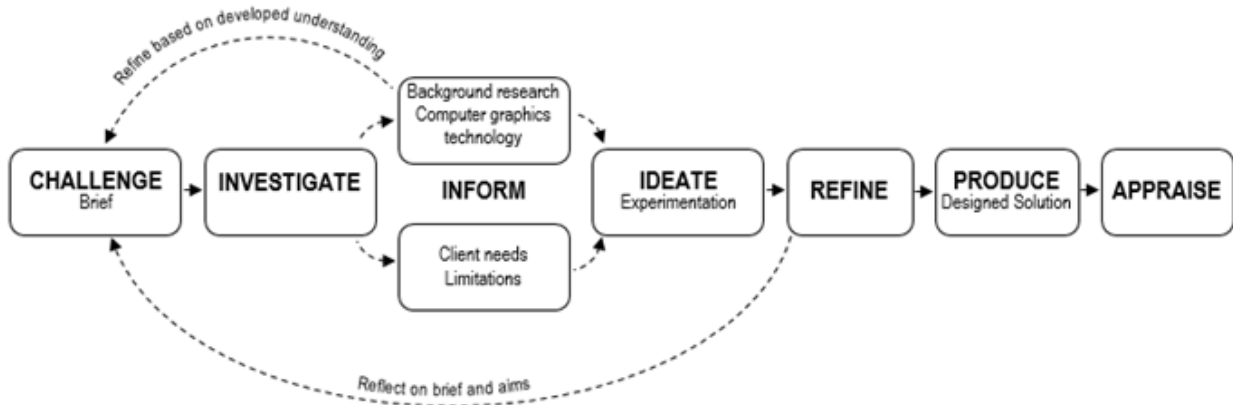


Diagram derived from Design Thinking: a non-linear process, Teo Yu Siang and Interaction Design Foundation used under CC BY NC SA 3.0

A DESIGN PROJECT RESPONSE IN COMPUTER GRAPHICS AND DESIGN - FOUNDATION

It is common for design brief responses to follow the structure below. Teachers may scaffold initial design challenges more heavily and provide more significant support in sections for learners as they develop their knowledge and skills of working through the design process. Teachers may also combine sections or unpack and further expand sections in their delivery and expectations of the project response in order to meet the needs of their learners. The three projects from the compulsory section will have a significant degree of teacher scaffolding, gradually developing learners' design and application skills. Learners develop their skills in responding to a design brief throughout this course, working towards a more learner-managed approach to the final design project from the optional section.

DESIGN BRIEF

The brief is usually the starting point of a design, and is a statement of the project's purpose. This details the requirements of the project or can be an explanation of a design problem to unpack and work from. This will include any information about a client or audience the design is intended for. It is also the place to include any limitations such as the size or technology to be used to fulfil the brief. The brief forms part of the criteria by which the final design solution is evaluated. Learners will begin by having design briefs given to them to work from, but should be working up to developing their own design brief for their final project from the optional section of the course.

RESEARCHES

Research involves the collection of information, including data and background information to assist in the understanding of the brief and development of the design solution. This can include research to:

- further understand the intended design scenario or audience
- consider existing similar products, problems or solutions
- identify current trends
- develop understanding of technologies which might be utilized in the product development phase.

GENERATION, DEVELOPMENT AND REFINEMENT OF IDEAS

This includes preliminary sketch designs and concept designs drawn as sketches with annotations which relate back to the brief and aims. Following on from sketches this can also include screen shots of exploratory computer graphic work. This documents the learner's design progression, reflection and refinement of ideas. This is part of the iterative approach which can cycle back through further research to inform concept development, and testing of product development which may then go back to the development stage to further refine concepts.

PRODUCTION

This shows the development of the designed solution using computer graphics. There needs to be evidence of decision making which gives reasoning for final design decisions. This section should include well annotated screenshots of the development of the final solution.

APPRAISAL

An appraisal reflecting on how well the brief and aims have been met by the final design, identifying any aims which have not been fully resolved.

REFERENCES

Learners must reference all images information, ideas and words which they use that are not their own creation. Images include, but are not limited to, pictures, tables, graphs, charts and graphics. This includes creations that are based on the works of others that learners manipulate, edit or otherwise transform.

Appendix 2

GLOSSARY

Term	Explanation
2D	two dimensional
2D modelling	a geometric model of an object as a two-dimensional figure
3D	three dimensional
3D modelling	is the process of developing a mathematical representation of any three-dimensional surface of an object
aesthetic	refers to those principles governing the nature and appreciation of beauty in design
aims	the objectives or goals
analyse	identify components and the relationship between them; draw out and relate implications
animation	moving images created from drawings or models that are photographed or created by computer
annotate	to add brief notes to sketch or design giving explanation or comment
anthropometry	the measurement of the human individual, these measurements are used to inform standard measurements in design
Applications (apps)	an application program is a computer program designed to perform a group of coordinated functions, tasks
appraise	assess the value or quality of appreciate make a judgement about the value of applyuse or employ knowledge and skills in a particular situation
architecture	the art or practice of designing buildings
assess	make a judgement about, to rate, weigh up, to form an opinion
asymmetry	a way of organising the parts of a design so that one side differs from the other without destroying the overall balance and harmony; also called informal balance
augmented reality (AR)	a technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view
balance	an even distribution of visual weight
basic	essential or elementary
binary format	a binary format is a format in which file information is stored in the form of ones and zeros
Computer Aided Design (CAD)	the use of computer systems to aid in the creation, modification, analysis, or optimization of a design
Computer Aided Manufacturing (CAM)	an application technology that uses computer software and machinery to facilitate and automate manufacturing processes
clear	easy to understand, fully intelligible, without ambiguity; explicit
client	a person, or group of people, for whom a design is being developed
coherent	orderly, logical and internally consistent relation of parts
collaborative	to work with another person or group in order to achieve or do something
communicate	convey information about, clearly reveal or make known
compare	estimate, measure or note how things are similar or dissimilar
concept	an abstract idea, the start of a design

concept sketch	freehand drawings that are used by designers as a quick and simple way of exploring initial ideas for designs
conflict resolution	a way for two or more people to find a constructive solution to a difference of opinion
consider	formed after careful thought
contrast	the arrangement of opposite elements (e.g. light vs. dark colours, rough vs. smooth textures, large vs. small shapes) in a design so as to create visual interest
critically	add a degree or level of accuracy, depth, knowledge and understanding, logic, questioning, reflection and quality to analysis/evaluation
describe	recount, comment on, and provide an account of characteristics or features
design	a solution, the process of creating a solution
design brief	a written document for a design project specifying parameters
design thinking	a process-based approach which uses an iterative approach to solve problems
detailed	meticulous, specific, precise
develop	construct, elaborate or expand on an opinion or idea
digital asset	a digital asset is any text or media that is formatted into a binary source and includes the right to use it
digital imaging	digital Imaging is a broad term applied to the recording of images electronically, conversion of those images into a set of numbers, storage of those numbers in a computer, and manipulation with computer programs
digital fabrication	a type of manufacturing process where the machine used is controlled by a computer. The most common forms of digital fabrication are 3D printing, laser cutting and CNC machining
direction	an element of design, all lines have direction - Horizontal, Vertical or Oblique
discuss	talk or write about a topic, taking into account different issues and ideas
document	to create a record of (something) through writing or record keeping
elements and principles of design	components that comprise a design, such as line, colour, shape, texture, form and space
emphasis	a principle of design that refers to a way of combining elements to stress the differences between those elements
enterprise	a project or undertaking
evaluate	appraise, measure, examine and judge the merit, significance or value of something
exemplary	an outstanding example of practice
explain	provide additional information that demonstrates understanding and reasoning; present a meaning with clarity, precision, completeness, and with due regard to the order of statements in the explanation
form	the visible shape or configuration of something
function	the purpose for which something is designed or exists
graphic	a drawing or picture used to illustrate
graphic organisers	tools to help to help people to organise ideas and communicate more effectively
hardware	computer hardware is the physical parts or components of a computer, such as monitor, keyboard, computer data storage
harmony	harmony is the combination or adaptation of parts, elements or related things, so as to form a consistent and orderly whole
hierarchy	a principle of design which refers to the order in which the elements within a composition are viewed by the eye
identify	name, list and establish or indicate who or what something is

integrate	combine one thing with another to form a whole
interpret	explain the meaning of information or actions
innovative	introducing new ideas or being original and creative in thinking
investigate	carry out an inquiry to discover and examine facts
isometric	isometric projection is a method for visually representing three-dimensional objects in two dimensions
iteration	the process of repeating a design to improve it
justify	support a conclusion or design decision
line	an element of design referring to linear marks which draw the eye along
mass	the visual weight or actual weight of an object
mind map	a diagram used to visually organise information
motion graphics	pieces of digital footage or animation which create the illusion of motion or rotation
negotiation	communication between two or more people which is intended to reach a beneficial outcome
organise	systematically order and arrange
orthographic	an orthographic drawing is a method that allows someone to represent a three-dimensional object on a two-dimensional piece of paper. By drawing the object for a various angles, the artist is able to show how the object looks in the real world.
outline	give the main features or aspects of
pattern	a repeated decorative design
perspective	perspective drawing is a drawing technique used to illustrate dimension through a flat surface. There are many forms including one perspective, two-point perspective, three-point perspective
problem	a question proposed for solution
proportion	the relationship between a part in comparative relation to a whole
prototyping	an early model of a design or product built to test a concept
range	a number of different things of the same general type; breadth
rapid prototyping	rapid prototyping is a group of techniques used to quickly fabricate a scale model of a physical part using three-dimensional computer aided design (CAD) data
raster	an image made of pixels
rationale	a set of reasons or a logical basis for an action
relevant	applicable and pertinent
repetition	repeating something e.g. part of a design in a pattern
research	investigation into and study of materials and sources
resolved	completed with a level of refinement and clarity of purpose/vision
rhythm	rhythm in design is created by the repetition of a design element
scale	reducing or enlarging an object whilst maintain proportion and relationship of objects
scale sketch	sketching whilst maintaining a representative scale. Scale sketches are often used in situations where relative size important but a full blown technical drawing is not required
select	choose in preference to another or others

software	software is a collection of instructions that enable the user to interact with a computer, its hardware, or perform tasks
solid modelling	solid modelling is a consistent set of principles for mathematical and computer modelling of three-dimensional solids
solution	the means of solving a problem, a design solution is a proposed solution to a design brief
space	the extent of area in two or three dimensions
special effects (SFX)	illusions or visual tricks used in the film, television, theatre, video game, and simulator industries to simulate the imagined events in a story or virtual world
summarise	express, concisely, the relevant details
sustainable design	the philosophy of designing to comply with the principles of social, economic, and ecological sustainability
symmetry	the quality of being made up of exactly similar parts facing each other or around an axis
synthesise	to combine so as to form a new, complex product
technological	relating to or using technology
texture	element of design that refers to the perceived surface quality or “feel” of an object—its roughness, smoothness, softness, etc. this can refer to the actual physical texture of a surface or the illusion of texture
time management	management and organisation of available time and tasks to be completed
tone	the lightness or darkness of a colour (value)
vector	a type of graphical representation which uses math to draw shapes using points, lines and curves
virtual reality (VR)	the computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment
visual communication	the communication of ideas and information in forms that can be read or looked upon
visual effects (VFX)	the processes by which imagery is created and/or manipulated outside the context of a live action shot

REFERENCE

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Line Of Sight

Learning Outcomes	Criteria and Elements	Content	Work Requirements
apply design process, principles and practices	C2 1 2 3 4 , C4 E1 2 3	Unit 1	U1 WR1, U2 WR 1 2 3 4
generate and communicate ideas and information in a variety of ways	C1 E1 2 3 4 , C3 E1 2 3 4	unit 1	U1 WR1, U2 WR 1 2 3 4
use practical skills to creatively solve problems	C2 1 2 3 4 , C3 E1 2 3 4 , C5 E1 2 3 4 5	Unit 1, Unit 2	U1 WR1, U2 WR 1 2 3 4
apply key design standards and conventions when using digital technologies	C7 E1 2 3	Unit 2	U2 WR 1 2 3 4
outline the fundamentals of contemporary digital technologies	C6 1 2 3 4	Unit 2	U2 WR 1 2 3 4
plan, organise, undertake and appraise a variety of design projects	C2 1 2 3 4 , C5 1 2 3 4 5	Unit 2	U1 WR1, U2 WR 1 2 3 4