



YEARS 11&12

COMPUTER GRAPHICS AND DESIGN - FOUNDATION TEACHING & LEARNING SUPPLEMENT

Teaching and Learning Supplement

COMPUTER GRAPHICS AND DESIGN - FOUNDATION (GCD215118)

ADVICE FOR TEACHERS

This document helps to describe the nature and sequence of teaching and learning necessary for students to demonstrate achievement of course outcomes.

It suggests appropriate learning activities to enable students to develop the knowledge and skills identified in the course outcome statements.

Tasks should provide a variety and the mix of tasks should reflect the fact that different types of tasks suit different knowledge and skills, and different learning styles. Tasks do not have to be lengthy to make a decision about student demonstration of achievement of an outcome.

COURSE SPECIFIC ADVICE

This *Computer Graphics and Design – Foundation Level 2* Teaching and Learning Supplement must be read in conjunction with the *Computer Graphics and Design – Foundation Level 2* course document.

It contains advice to assist teachers delivering the course and can be modified as required. This Teaching and Learning Supplement is designed to support teachers new to or returning to teaching this course.

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 Level 2 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.

COURSE CONTENT

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 Title	Indicative times
Unit 1	Design Foundation	30 hours
Unit 2	Digital Imaging	30 hours
Unit 3	3D Modelling	30 hours
Unit 4	Animation	30 hours
Unit 5	Elective Topic	30 hours



TEACHING AND LEARNING ACTIVITIES

Unit 1 *Design Foundation*

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.

Examples of learning activities

Learners:

- select a small household object to use as the subject for a sequence of freehand drawing tasks. The one object is drawn using observational, orthogonal, isometric drawings and perspective drawings to link the tasks as a sequence
- use a fishbone diagram to document considerations for a design project
- list key requirements from a design brief on small notepaper to keep in view while generating ideas; evaluate the potential of ideas to solve the requirements of the client against this list
- use thinking strategies to reflect on how details of a brief have been addressed, such as relevance and appeal to the target audience, ability to prompt action, effectiveness in the context and competition
- design an identity for a client; e.g. café, real estate business, doctor, mechanic, pet shop, architect, nursery, to identify their business and provide information about them. Design options exploring the use of the logo and/or its components (monogram or motif) to be developed and tested for final presentation on collateral material such as: stationery, takeaway packaging, signage, uniforms, website, app or loyalty card
- participate in a class debate 'What is good design?'
- create a series of app icons that represent each of the Design Elements and Design Principles
- make a set of swatches using a variety of rendered textures and surfaces. Practise rendering to represent these textures prior to using them on forms to communicate the surfaces and enhance the three-dimensional form of an object
- create and use a decision matrix to evaluate a design
- keep an ongoing visual diary in which to stick inspirational pictures with annotations and initial sketches
- interview a designer. Discuss clients for whom they have produced visual communication solutions, comparing the nature of the task to the methods used throughout the design process. Discuss how details of the brief are developed and documented and how these have influenced the designers' design process and decisions made
- investigate the meaning of the terms: intellectual property, copyright and trade marks. Develop clear definitions for each and identify a range of examples where influences from other sources are evident or have been used deliberately to associate it with the original.



Resources Perspective sketching
<https://www.youtube.com/watch?v=felys-u4nflk>

Technical Drawing
http://www.vcaa.vic.edu.au/Documents/vce/adviceforteachers/visualcomm/VCE_TechnicalDrawingSpecs.pdf

Unit 2 ***Digital Imaging***

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.

Examples of learning activities

Learners:

- write a design brief to create a piece of advertising using digital images
- compare and contrast different systems used to create graphics
- design and create a promotional poster using a specific design style
- critique a graphic of a product developed by a fellow student
- explain the differences, advantages and disadvantages of JPG, BMP and TIFF image file types
- demonstrate rendering techniques for developing a presentation drawing. Learners can use illustration software or illustration techniques using a variety of media
- select a product and investigate how this can be changed by altering colour and texture within the graphics
- use a range of techniques to create a mythical creature
- use brainstorming and/or annotated visualisations to present many ways to communicate a message
- plan a visit to a designer who focuses on use of digital images, or invite a designer to speak about their work and how they establish and respond to the client's needs and requirements, particularly in relation to the function and appeal of a web site
- select an everyday product and design an advertisement to make this product appealing to a defined market
- create a final presentation of a finished product, including annotations about meeting the design brief
- create a new package and surface graphics for the promotion of unprocessed foods for healthy body awareness. Graphics are required for t-shirts, socks, stockings, singlet or beanies. Teenagers are the target audience. The product is manufactured in strong bold colours with names relating to fresh healthy foods.

Resources Adobe Photoshop Learn and Support
<https://helpx.adobe.com/au/support/photoshop.html?promoid=5NHJ8FD2&mv=other>



Unit 3

3D Modelling

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.

Examples of learning activities

Learners:

- select a screen shot or picture from an existing computer game. Annotate the picture identifying visual features of the game and why the designer may have used these effects
- investigate different lighting options and the impact these have on appearance of a solid item
- design and create a character
- explain the differences between box modelling, spline modelling and subdivision modelling
- identify the characteristics of well-designed and executed 3D modelling
- select a designer who works in 3D modelling. Appraise their work in terms of the design elements and principles, how they use colour, line, shape, balance etc. Locate other works by the same designer and investigate where the designer uses a consistent style throughout their work
- draw a concept map for a character design, work this up into a 3D artefact
- search for examples of 3D visualisations on the internet. Create a class description of visualisations and add examples using a collaborative document such as OneNote

Rhino

Resources <https://www.rhino3d.com/>

Autodesk 3D Modelling

<https://www.autodesk.com.au/solutions/3d-modeling-software>

Autodesk Knowledge Network

<https://knowledge.autodesk.com/support>

Tinkercad

<https://www.tinkercad.com/>

SketchUp

<https://www.sketchup.com/>

Blender

<https://www.blender.org/>



Unit 4 **Animation**

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.

Examples of learning activities

Learners:

- compare and contrast different systems to create animated sequences
- create a storyboard for an animation sequence
- discuss the difference between animation and video
- brainstorm methods of researching, collecting, analysing and presenting information that could be used to determine an animation sequence, using Padlet or post-it notes
- view a short animation sequence and try to backwards map by creating a storyboard from the animation
- use lego or character toys to create a quick stop frame animation
- watch a youtube clip showing how animations have been used in a recent movie. Get together with another student who focussed on a different movie and compare the techniques used in each
- Discuss the role of a 'beta tester' for video gaming products. i.e. someone who will be end-users of the products. How do beta testers work with game designers and developers to influence the product's development?

Resources Padlet
<https://padlet.com/>

StoryboardThat
<http://www.storyboardthat.com/>

Unit 5 Elective Topic

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.

OR

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.

OR

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.

OR

4. Asset development

This content area focuses on the role of assets within computer graphics. Learners will acquire, transform and customise assets designed by others, and design their own for specific purposes

Examples of learning activities

Learners:

- write a design brief to frame up your project in your elective area
- co-construct a set of class protocols to use when students and evaluating and providing feedback to one another on design concepts
- create a Gantt chart to plan a design project focussing on an elective topic
- brainstorm approaches to a design brief, then apply a divergent and convergent thinking approach to refine this
- develop evaluation criteria for the elective project
- investigate different formats for creating action plans. Consider the advantages and disadvantages of each and make a recommendation as to which one might suit you best to use for projects

Resources Adobe Spark
<https://www.adobe.com/au/products/spark.html>

WORK REQUIREMENTS

Unit 1	Design Foundation	Design process presentation
Unit 2	Digital Imaging	One design project
Unit 3	3D Modelling	One design project
Unit 4	Animation	One design project
Unit 5	Elective topic	One design project

Note

All websites cited were accessed and checked for accuracy and appropriateness of content and were current as of January 2018.

