



TEACHING AND LEARNING GUIDE

The Teaching and Learning Guide must be read in conjunction with the course document. It contains advice to assist teachers delivering the course and can be modified as required.

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EXPANDED COURSE OUTLINE

CONTEMPORARY DESIGN IN COMPUTER GRAPHICS

Design underpins all computer graphics applications. This unit should take approx 25 hours and will include the following core units:

DESIGN PRINCIPLES

Content:

The design elements are: line, shape, form, tone, texture, and colour.

The design principles are used to arrange, compose or organise the design elements. They include emphasis, harmony, repetition, rhythm, pattern, dominance, unity, proportion, scale, hierarchy, balance, function, limitations, costing and contrast.

Students will have an understanding of the basic building blocks of design and how to use them in their designing. They will also need to understand the application of design principles through problem solving. They will need to be able to talk/write about them in their analysis of other people's designs. They will also start to understand the emotional and aesthetic qualities of the elements and principles.

DESIGN PROCESS

Content

The design process involves analysis, synthesis and evaluation. It informs the development of efficient and effective design solutions.

This is the process that designers use to come up with ideas and to make them happen. Depending on the task there are many different approaches and steps, this is an example of one:

1. Design problem/brief/ recognise a need
2. Analysis/ brainstorm/ideas/define the problem
3. Planning/investigation/gather information
4. Research/analyse information
5. Development/ problem solving/design solutions/develop a plan
6. Solution/manufacture testing/design alternative solutions
7. Evaluation/evaluate potential solutions.

Students need to have a good understanding of the process in theory and to use it in practise.

DRAWING AND DESIGN

Content

Drawing is an essential element in Design. The following drawing for design elements may be included:

1. Multi view drawing method: Orthogonal This is a series of separate but aligned two dimensional views of a three dimensional object showing it from the top, front and side
2. Pictorial three dimensional drawing methods: oblique, isometric, Plano metric, parallel one point and two point perspective
3. Drawing real objects.

TECHNOLOGY AND DESIGN

Content

Technological innovation occurs through the introduction of new or improved products and processes or standards

Areas that may be covered include:

- Hardware design and configuration
- Industrial software applications including the integration of design and manufacturing standards
- Input and output devices to manipulate digital data
- Software customisation.

HISTORY AND FUTURE CONCEPTS OF DESIGN

Content

The impact of major design movements (eg Bauhaus, modernism, post modernism).

How design has developed with changes in technology.

New technologies available.

DESIGN AND SOCIETY

Content

Design is understood according to social, cultural, economic and historical influences. These create conventions - it is important to understand how design influences audiences within an environment or has an impact on products.

All design has an impact on society, this may be social environmental physical or emotional. These contexts need to be incorporated into the design process and taken into consideration in any product or outcome. The physical or environmental context need to be analysed or considered to identify potential limitations or possibilities

It is also necessary to understand ethical and legal issues relating to the intellectual property, as well as issues such as ethics, ergonomics, ecological and economic sustainability.

Intellectual property is property generated through intellectual or creative activity. Types of intellectual property protection include:

- Patents
- Trade marks
- Design registration
- Confidential information/trade secrets
- Copyright.

See also <www.ipaustralia.gov.au/smartstart/glossary.htm>

OPTIONAL DESIGN AREAS

AT LEAST ONE (1) MUST BE COVERED

CONTEMPORARY DESIGNERS

Content

1. Contemporary design practise, looking at the tools processes, techniques, knowledge and skills a designer uses to problem solve.
2. Research contemporary designers in the areas of specialisation (eg architects, animators, furniture designers).

DESIGN ANALYSIS

Content

This occurs at the stage where a design has reached reality. At this stage a product needs testing through a range of situations.

The deconstruction of this process is:

- has the design solution meth the needs of the brief?
- has the design analysis redefined the problem?
- is the information research valid?

DESIGN AND CLIENT/MANUFACTURING

Content

Working with a client or towards manufacturing involves close liaison between the designer and the end product or client.

Designers need to have a clear understanding of production techniques and materials, as well as industry standards and conventions.

MANAGING RESOURCES AND DESIGN PROJECTS

Content

Archiving, storage, and retrieval of data.

Risk analysis.

Industry standards and conventions.

Time and resource management.

AESTHETICS AND EXPRESSION IN DESIGN

Content

Understanding of aesthetics.

Understanding of the impact of visual communication to an audience, in imparting ideas, values, beliefs, attitudes, messages and information to an audience.

VISUAL COMMUNICATION AND DESIGN

Content

Purposes and intentions of expressing an idea.

COMPUTER GRAPHICS AND DIGITAL CONTENT AREAS

This is the basis for working within an area of specialisation, application. Students need a basic understanding of a number of areas and must study at least 3 of the studio areas. It is expected that hardware, software, networking and other computer systems theory components are taught embedded in the practical application. This part of the course should be approx. 75 hours and include:

DIGITAL IMAGING

Content

- Using software to edit, enhance and manipulate images
- Visual communication, images and text
- Working with clients/designing for clients
- Production output to printers, CMYK
- Raster and Vector graphics
- Optimisation for the Internet
- Use of layers
- Image formats
- File management and protocols (archiving, storage and retrieval of data).

3D MODELLING

Content

- Understand co ordinate systems, transformation and deformation tools
- Create models using a range of techniques (primitives, parametric, spline(nurbs), polygon, Boolean operations)
- Apply materials and textures and understand use of bitmaps, procedural shaders and mapping co ordinate types
- Apply lighting and cameras to a 3D scene.

2D AND 3D ANIMATION

Content

- Understanding of Animation systems, key framing, interpolation, curve editing and spline paths, shape and movement tweening
- Create a fly through of a 3d graphic scene
- Create animated text, sound and video into a 2d animation
- Character animation
- Utilize reactor to produce an animation with realistic gravity
- Storyboarding
- Create a biped and apply an animation file.

WEB DESIGN

Content

- Interactive multimedia
- Dynamic web construction
- CSS
- File size and web optimisation.

SOLID MODELLING

Content **(DRAFT)**

- Industrial design processes?
- Conventions and contemporary practices in product manufacturing?
- Domestic and industrial architecture?

VIDEO, MOTION GRAPHICS AND POST PRODUCTION EDITING

Content

- Capture and importing footage
- Managing clips
- Editing and refining sequence
- Effects and transitions
- Adding sound
- Rendering and output.

GAME DESIGN AND MAKING

Content

- Simple game development
- Game maker or flash interactive elements.

MAJOR RESEARCH PROJECT

50 hours (approximately)

The purpose of the extended design project is to choose a computer graphics area of specialisation and using the design process successfully produce a product choosing the appropriate software techniques and processes that the discipline uses.

Some of the specialised areas may include:

- Architecture
- Engineering
- Product design
- Industrial design
- 2D or 3D graphics
- 2D or 3D animation
- Creative computer graphics
- Graphics for film and television
- Game development and design
- Web design
- Graphic Design
- Fashion Design.

For more details see the *Project Guidelines* document.

RESOURCES

(to be developed)

GLOSSARY OF TERMS

(to be developed)