Stage 5 Graphics Technology
Course plan

The 200-hour course will be delivered over two years (9 and 10). The core modules will be implemented in year 9, as a 100-hour course. The school will take advantage of the fact that core modules 1 and 2 can be combined to be taught as a whole rather than as two strictly separated 50-hour modules. This will provide the opportunity to revisit the main *learn abouts* as required.

The course will be delivered in a traditional graphics room (drawing boards and tee squares) with the addition of 15 student accessible computers. Therefore the CAD and other ICT requirements, e.g. Internet for research, will be integrated into the core and later in the option modules.

At this stage it is anticipated there will be topics across the core modules presented with an integrated project to consolidate knowledge every 10 weeks, that is, each term. This will be subject to review as the units of work are developed. However regular integrated topics (projects) will be used even if the timing may change.

One of the challenges in developing the units of work will be the careful mapping of all outcomes from the core modules over the whole twelve month period. There will be multiple opportunities to address each of the outcomes. See the outcomes mapping grid later in this document.

The teaching units within the core will be sequential and become increasingly more complex. The *NSW model of pedagogy* was considered when developing this course plan. The plan should provide connection to previous learning and the opportunity to develop intellectual quality through the use of higher order thinking strategies.

Stage 5 Graphics Technology Core modules 1 and 2 *learn abouts* and *learn tos* mapped against units of work

Students learn about:	Students learn to:	Sun smart buzz off	A bite to eat	BBQ	Light up	Table and or chair
Graphics Principles and Techniques						
Work Practices • equipment – type and care	• use and maintain appropriate drafting equipment	∗	∗	∗	∗	∗

• the importance of
  − selection and maintenance of equipment
  − clean and ordered work practices
	• apply planned and ordered approaches to producing drawings	∗	∗	∗	∗	∗

• collaborative work practices	• work collaboratively in the production of a graphics project			∗		∗

• Occupational Health and Safety
  − government legislation
  − potential work environment hazards and risks
	• identify OHS issues that impact on work environments	∗	∗	∗	∗	∗

Standards • Australian and international drafting standards	• apply drafting conventions to create standard page layouts (eg paper size, borders, title blocks, projection symbols)	∗	∗	∗	∗	∗
Computing Principles • CAD application set-up	• configure drafting applications	∗	∗	∗	∗	∗

• the CAD environment including
  − tools
  − methods and modes
  − constraints and modifiers
	• analyse and break down CAD drawing techniques into three general steps
	  − what shape to draw (tools)
	  − how to draw that shape (tool methods/modes)
	  − where to start and end the shape (constraints/modifiers)
		∗	∗	∗	∗	∗

Students learn about:	Students learn to:					
	• use basic CAD concepts including 2D/3D coordinate geometry, scale and measurement to carry out basic drafting construction	∗	∗	∗	∗	∗
	• manipulate objects in relation to size, placement and orientation • evaluate and discriminate between manual and CAD techniques	∗	∗	∗	∗	∗
• output options including printers, file formats, magnetic/optical media and computer-based communication media	• output information to a specified device or medium	∗	∗	∗	∗	∗
Social and Ethical Issues • social and environmental implications of the graphics industry	• critically analyse graphical images for gender, social and cultural messages that may be conveyed		∗			∗
Design in Graphics						
• design principles and processes	• identify design principles and processes in the development, production and evaluation of graphical presentations	∗	∗	∗	∗	∗
• methods of graphical representation used in design	• identify and interpret different graphical representations of an existing design	∗	∗	∗	∗	∗
• freehand pictorial and orthogonal drawings	• visualise and sketch common objects • identify and apply freehand drawing techniques to a range of simple orthogonal and pictorial drawing types	∗	∗	∗	∗	∗
Planning and Construction						
Applied Geometry • measurement and accuracy • application of scales in drawing	• use scales in the production of drawings			∗		∗
• simple geometric constructions • tangency	• apply basic geometric construction and tangency to graphical communication	∗			∗	
• directional bearing and angular measurement	• apply directional bearing, distance and scale to two-dimensional course plotting			∗		

Students learn about:	Students learn to:					
Orthogonal Drawing • first and third angle projection • relating principal planes to the projection of views in the first and third angle	• create orthogonal drawings in third angle projection		*	*	*	*
• multi-view drawings • measuring and drawing objects • drawing from pictorial images • dimensioning to appropriate Australian drawing standards • variations in international drawing standards and units of measurement	• identify and produce drawings used in design and manufacture • recognise and apply appropriate AS1100 drawing standards	* *	* *	* *	* *	* *
• creating orthogonal drawings using CAD	• use the features of CAD software to create and dimension orthogonal drawings			*		*
Pictorial Drawing • oblique drawing • isometric drawing	• measure and draw simple objects • produce pictorial drawings from orthogonal drawings using manual and/or CAD techniques	*		*	*	*
Presentation						
Rendering • shading, shadows, tone, texture • representation and colour • computer modelling and computer-based graphics	• use manual and /or computer-based rendering techniques in a variety of 2D and 3D drawings	*	*	*	*	*

Product Drawing
• drawing to convey technical information or product concept
  − shape description
  − size description
  − technical information
• use of CAD to generate final drawings
	• consolidate and apply pictorial, orthogonal and presentation techniques to a range of products
	• identify and produce types of drawings used in marketing
		*		*		*

Techniques • manual presentation methods	• present product information in a clear and innovative manner	*	*	*	*	*

Students learn about:	Students learn to:					
Graphics Principles and Techniques						
Work Practices • the importance of accurate and neat work practices	• develop a planned and ordered work regime to produce neat and accurate drawings	∗	∗	∗	∗	∗
• collaborative work practices	• work collaboratively in the production of a graphics project		∗			∗
• career opportunities pathways in graphics	• explore careers in graphics • analyse the roles and contributions of males and females to the graphics industry	∗	∗	∗	∗	∗
• Occupational Health and Safety	• respond to OHS issues to ensure a safe working environment	∗	∗	∗	∗	∗
Standards • Australian drafting standards • drafting scales and templates including radius, circle, nut/bolt and architectural	• apply AS1100 drafting standards • use standard instruments in the production of drawings and presentations	∗	∗	∗	∗	∗
Computing Principles • the CAD environment	• use standard features of CAD software including layers, symbol libraries and page templates	∗	∗			
Social and Ethical Issues • different cultural approaches and sensitivities to the use and applications of graphical communication	• identify the cultural significance of graphical communications throughout history	∗			∗	∗
Design in Graphics						
• design principles and processes	• apply design principles and processes in the development, production and evaluation of graphical presentations • select and apply graphical communication techniques for specific purposes	∗	∗	∗	∗	∗
• research sources, eg internet, journals, magazines, digital media, libraries and personal interviews	• use a range of sources to gather information to assist in the development of project work	∗	∗	∗	∗	∗
• collaborative work environments	• work collaboratively in research and/or design activities	∗	∗	∗		∗

Students learn about:	Students learn to:					
• freehand design drawings	• apply different graphical representations in elementary design situations • use sketches to assist with problem-solving and communication of ideas	*	*	*	*	*
• the use of computer graphics to assist in the development and representation of designs	• use 3D modelling and rendering to visualise and experiment with designs			*	*	*
Planning and Construction						
Applied Geometry • basic developments of simple solids including application to cones, prisms, cylinders and pyramids	• produce developments of simple objects • apply development techniques to pattern design	*			*	
• true lengths of lines	• apply basic construction techniques to determine the true length of inclined lines	*			*	
Orthogonal Drawing • assembled orthogonal drawings • sectioned orthogonal views • standard representation of common engineering and architectural features	• produce assembly drawings from exploded pictorial drawings and detail drawings • produce orthogonal drawings containing full sections • select appropriate views and drawing types for a particular context • apply orthogonal drawing techniques to architectural, engineering or cabinet drawing • relate common drawing conventions to AS1100 standards • employ manual techniques and drawing templates to draft common engineering and architectural elements	* *	* *	* * *	* * * * *	* * * *
• the use of CAD software in the development of more complex orthogonal drawings	• use the hatching and fill features of CAD in the creation of sectioned views • use CAD symbol libraries to draw common engineering elements • apply layers to the production of orthogonal drawings	*		* *	* *	* *

Students learn about:	Students learn to:					
Pictorial Drawing • a variety of pictorial representation techniques including – isometric and oblique – planometric/axonometric – 1 and 2-point perspective	• visualise and draft common objects • construct pictorial circles and geometric shapes • utilise a range of pictorial representations	∗	∗	∗	∗	∗
1. generation of graphic shapes in the CAD environment to create realistic 3D images	• create 3D images using the principles of extrusion and revolution • manipulate 3D objects in relation to size, placement and orientation	∗		∗	∗	∗
Presentation						
Pictorial Rendering • rendering pictorial drawings to assist others in the visualisation of a product or concept	• apply manual rendering and/or modelling techniques to a range of products	∗	∗	∗	∗	∗
• 3D modelling and rendering	• model and render a simple product in 3D using CAD or appropriate graphics software	∗	∗	∗	∗	∗
Techniques • multimedia and traditional presentation methods	• apply both traditional and multimedia techniques to present products graphically	∗			∗	∗

Additional Content						
Students learn about:	Students learn to:					
• advanced geometric constructions	• apply advanced geometric curve construction techniques to the representation of helix and cam profiles					
• advanced orthographic projection	• create auxiliary views to orthogonal drawings to represent the true-shape-of-surface of single and/or double inclined surfaces					
• advanced pictorial projection	• apply isometric projection techniques to the creation of true isometric drawings • apply 2 and 3-point perspective techniques to the construction of pictorial views • represent complex curved surfaces in isometric and oblique drawings					