



## Stage 5 Graphics Technology

### Core modules: rationale

Much time is taken on introduction to equipment and environment. If this is not done properly and correctly, students will begin with bad habits and not be disciplined in the correct use of tools and equipment. However I would usually have students using board, T-squares and set squares by the end of the first 1-hour lesson, for example, setting up a sheet.

The *lengthy* period at the beginning of this module also addresses OH&S, work practices and standards. Standards could be addressed at another time in the module or course, I prefer to introduce this early as a reference and building block for future work. It is important that students are grounded in the important principles of OH&S and work practices and standards as early as possible and then these can be revisited as required.

Students should be given clear outlines of the work required of them, the deadlines for this work, as well as work samples of best practice.

As an introduction at the beginning of each module students should be briefed on the content, I would provide a copy of the unit to each student, or a student outline. Teachers can best judge the timeline for their particular group of students. The timeline I would impose would need to accommodate students at different levels of achievement and students with varying support needs. Classroom teachers should sequence and present work according to the needs of students in their group, but also providing a scope of work significant enough to challenge all learners.

Stage 5 Graphics Technology: Year 9	
Core module: Module 1	Module duration: 10 weeks
Module title: Getting my portfolio started	Outcomes (targeted outcomes in bold) A student: <b>5.1.1 communicates ideas graphically using freehand sketching and accurate drafting techniques</b> 5.1.2 analyses the nature of information and intended audience to select and develop appropriate presentations <b>5.2.1 designs and produces a range of graphical presentations</b> 5.2.2 evaluates the effectiveness of different modes of graphical communications for a variety of purposes <b>5.3.1 identifies, interprets, selects and applies graphics conventions, standards and procedures in graphical communications</b> 5.3.2 manages the development of graphical presentations to meet project briefs and specifications <b>5.4.1 manipulates and produces images using computer-based drafting and presentation technologies</b> 5.4.2 designs, produces and evaluates multimedia presentations <b>5.5.1 identifies, assesses and manages relevant OHS factors to minimise risks in the work environment</b> <b>5.5.2 demonstrates responsible and safe work practices for self and others</b> 5.6.1 demonstrates the application of graphics to a range of industrial, commercial and personal settings <b>5.6.2 evaluates the impact of graphics on society, industry and the environment</b>
Module description:  This 10-week module is placed in Year 9 in the first 100 hours of the 200-hour course. The theme for this unit is <i>Getting my portfolio started</i> .  Throughout this unit students will be introduced to: <ul style="list-style-type: none"><li>classroom and equipment orientation</li><li>OH&amp;S issues</li><li>folio design, organisation and set up</li><li>technical language and standards</li><li>freehand sketching</li><li>geometric constructions and tangency</li><li>recognise draw and develop basic geometric shapes</li><li>orthogonal drawing</li><li>CAD layout basics and CAD tools</li><li>presentation of portfolio layout and contents</li><li>pictorial drawing and rendering.</li></ul>	
Resources:  Computer lab and appropriate software and printing facilities, technical drawing and drafting equipment, OHP, coloured pencils, rendering markers, paper and card. Equipment will be provided as a class set. Students will be expected to purchase their own equipment to enable project and homework completion. A complete class set will enable all students to participate without disadvantage from day 1 and will promote ownership and pride in their work environment. Students will be trained to maintain and manage their physical environment, boards, t-squares, equipment, and storage of work and work samples.  Programming requirements:  Consideration has been given to the time lost through external and internal assessment procedures and variations in school routines. This module has been designed to be delivered over 8 weeks with final 2 weeks allocated for completion of the final assessment task.	
Class tasks:  Throughout this unit students will complete a number of technical drawing tasks in class.	
Assessment:  Assessment will be based on the class tasks and the final assessment task in each module.	

Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
<b>Graphical principles and techniques</b> <i>Work practices</i> <ul style="list-style-type: none"> <li>equipment – type and care</li> <li>the importance of accurate and neat work practices</li> <li>the importance of <ul style="list-style-type: none"> <li>selection and maintenance of equipment</li> <li>clean and ordered work practices</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>use and maintain appropriate drafting equipment</li> <li>develop a planned and ordered work regime to produce neat and accurate drawings</li> <li>apply planned and ordered approaches to producing drawings</li> </ul>	<b>Week 1</b> <ul style="list-style-type: none"> <li>Students will be introduced to the technical drawing equipment and materials they will be using.</li> <li>Students will be instructed through teacher demonstration the correct use and maintenance of equipment</li> <li>Students will be briefed on standard practices and housekeeping in the Graphics work environment, computer room and design studio.</li> </ul>	<p>Students can recall and describe descriptions, definitions and concepts.</p> <p>Students can recall and describe descriptions, definitions and concepts.</p>	<p>Oral feedback and clarification.</p> <p>Observation and oral feedback.</p>
<ul style="list-style-type: none"> <li>Occupational Health and Safety <ul style="list-style-type: none"> <li>government legislation</li> <li>potential work environment hazards and risks</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>identify OHS issues that impact on work environments</li> <li>respond to OHS issues to ensure a safe working environment</li> </ul>	<ul style="list-style-type: none"> <li>Student and teacher discussion about OH&amp;S issues that impact on their work environment.</li> <li>Student identification of potential and real risks and plan to seek resolution or correction.</li> </ul>	<p>Students can discriminate between issues of OH &amp; S make suggestions about solutions.</p>	<p>Teacher observation and oral feedback during completion of tasks and discussions</p>
<i>Standards</i> <ul style="list-style-type: none"> <li>Australian and international drafting standards</li> </ul>	<ul style="list-style-type: none"> <li>apply drafting conventions to create standard page layouts (e.g. paper size, borders, title blocks, projection symbols)</li> </ul>	<ul style="list-style-type: none"> <li>Teacher introduction to: <ul style="list-style-type: none"> <li>paper standards, types , sizes</li> <li>boards and T-squares, set squares etc</li> </ul> </li> <li>Students set up board and T-square, clip down sheet and experiment using T-square and set squares.</li> </ul>	<p>Students can recall and describe descriptions, definitions and concepts.</p>	<p>Teacher observation and oral feedback during completion of task and discussions</p>
<ul style="list-style-type: none"> <li>Australian drafting standards</li> <li>drafting scales and templates including radius, circle, nut/bolt and architectural</li> </ul>	<ul style="list-style-type: none"> <li>apply AS1100 drafting standards</li> <li>use standard instruments in the production of drawings and presentations</li> </ul>	<ul style="list-style-type: none"> <li>Teacher introduction to Standards for: <ul style="list-style-type: none"> <li>margins</li> <li>title blocks</li> <li>symbols</li> <li>projection.</li> </ul> </li> </ul>	<p>Students can recall and describe descriptions, definitions and concepts.</p>	<p>Observation and oral feedback.</p>

Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
<b>Planning and construction</b> <i>Applied geometry</i> <ul style="list-style-type: none"> <li>• measurement and accuracy</li> <li>• application of scales in drawing</li> </ul>	<ul style="list-style-type: none"> <li>• use scales in the production of drawings</li> </ul>	<b>Weeks 2 and 3</b> <ul style="list-style-type: none"> <li>• Teacher demonstration and student introduction to: <ul style="list-style-type: none"> <li>– sheet layout</li> <li>– manipulation of set squares</li> <li>– basic geometric constructions</li> <li>– recognition and use of basic line standards</li> <li>– compass techniques</li> <li>– basic tangency.</li> </ul> </li> <li>• Students will complete a series of completion sheets as described above, sequenced to focus on skill development with instruments and recognition of concepts.</li> </ul>	Students demonstrate understanding and competence in the development and production of drawings and complete tasks as directed.	Teacher observation and oral feedback during completion of tasks and discussions  Annotations on and marking of students work and support and discussions in class.
<ul style="list-style-type: none"> <li>• simple geometric constructions</li> <li>• tangency</li> </ul>	<ul style="list-style-type: none"> <li>• apply basic geometric construction and tangency to graphical communication</li> </ul>			

Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
<p><i>Orthogonal drawing</i></p> <ul style="list-style-type: none"> <li>• first and third angle projection</li> <li>• relating principal planes to the projection of views in the first and third angle</li> <li>• multi-view drawings</li> <li>• measuring and drawing objects</li> <li>• drawing from pictorial images</li> <li>• dimensioning to appropriate Australian drawing standards</li> <li>• variations in international drawing standards and units of measurement</li> </ul>	<ul style="list-style-type: none"> <li>• create orthogonal drawings in third angle projection</li> <li>• identify and produce drawings used in design and manufacture</li> <li>• recognise and apply appropriate AS1100 drawing standards</li> </ul>	<p><b>Weeks 4 and 5</b></p> <ul style="list-style-type: none"> <li>• Teacher led discussion and instruction on <ul style="list-style-type: none"> <li>– orthogonal projection</li> <li>– history of orthogonal projection</li> <li>– world and Australian standards</li> <li>– AS1100 Standards.</li> </ul> </li> <li>• Students to complete a simple three view orthogonal drawing of a milk carton. Sequence of work: <ul style="list-style-type: none"> <li>– freehand</li> <li>– using instruments</li> <li>– dimensioned.</li> </ul> </li> </ul>	<p>Students demonstrate understanding and competence in the development and production of sketches and complete tasks as directed.</p>	<p>Teacher observation and oral feedback during completion of tasks and discussions</p>

Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
<p><i>Pictorial drawing</i></p> <ul style="list-style-type: none"> <li>• oblique drawing</li> <li>• isometric drawing</li> </ul> <ul style="list-style-type: none"> <li>• a variety of pictorial representation techniques including               <ul style="list-style-type: none"> <li>– isometric and oblique</li> <li>– planometric/axonometric</li> <li>– 1 and 2-point perspective</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• measure and draw simple objects</li> <li>• produce pictorial drawings from orthogonal drawings using manual and/or CAD techniques</li> <li>• visualise and draft common objects</li> <li>• construct pictorial circles and geometric shapes</li> <li>• utilise a range of pictorial representations</li> </ul>	<p><b>Weeks 6 and 7</b></p> <ul style="list-style-type: none"> <li>• Teacher led introduction to pictorial representations.</li> <li>• Completion sheet to embed recognition and translation from pictorial to orthogonal and orthogonal to pictorial.</li> <li>• Students complete oblique, isometric and perspective views of milk carton incorporating a graphic.</li> <li>• Students to place a circle using a circle guide onto a face of the carton in isometric and plot in other views.</li> </ul>	<p>Students demonstrate understanding and competence in the development and production of sketches and completion of accurate drawings.</p>	<p>Teacher observation and oral feedback during completion of tasks and discussions.</p> <p>Annotations on and marking of students work and support and discussions in class.</p>
<p><b>Presentation</b></p> <p><i>Rendering</i></p> <ul style="list-style-type: none"> <li>• shading, shadows, tone, texture</li> <li>• representation and colour</li> <li>• computer modelling and computer-based graphics</li> </ul> <p><i>Pictorial rendering</i></p> <ul style="list-style-type: none"> <li>• rendering pictorial drawings to assist others in the visualisation of a product or concept</li> </ul>	<ul style="list-style-type: none"> <li>• use manual and /or computer-based rendering techniques in a variety of 2D and 3D drawings</li> <li>• apply manual rendering and/or modelling techniques to a range of products</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher led introduction to rendering, tone, media, and medium.</li> <li>• Samples of pictorial drawings, photocopied onto coloured stock, rendered to indicate shading, shadows, tone and texture.</li> <li>• Students introduced to the use of templates and guides.</li> </ul>	<p>Students demonstrate understanding and competence in the development and production of sketches and complete tasks as directed.</p>	<p>Teacher observation and oral feedback during completion of tasks and discussions.</p>

Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
<p><i>Computing principles</i></p> <ul style="list-style-type: none"> <li>• CAD application set-up</li> <li>• the CAD environment including <ul style="list-style-type: none"> <li>– tools</li> <li>– methods and modes</li> <li>– constraints and modifiers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• configure drafting applications</li> <li>• analyse and break down CAD drawing techniques into three general steps <ul style="list-style-type: none"> <li>– what shape to draw (tools)</li> <li>– how to draw that shape (tool methods/modes)</li> <li>– where to start and end the shape (constraints/modifiers)</li> </ul> </li> <li>• use basic CAD concepts including 2D/3D coordinate geometry, scale and measurement to carry out basic drafting construction</li> </ul>	<p><b>Week 8</b></p> <ul style="list-style-type: none"> <li>• Teacher introduction to: <ul style="list-style-type: none"> <li>– system and application software</li> <li>– file administration and use of the directory</li> <li>– creating first document and the page attributes.</li> </ul> </li> <li>• Students will complete a master page in CAD. The page is to include: <ul style="list-style-type: none"> <li>– margin</li> <li>– title block</li> <li>– name</li> <li>– scale</li> <li>– drawing number</li> <li>– output hardcopy of the page for portfolio.</li> </ul> </li> </ul>	<p>Completion of task will indicate understanding and competence in use of CAD.</p> <p>Students demonstrate understanding and competence in the completion of a master page in CAD.</p>	<p>Observation and oral feedback.</p> <p>Annotations on and marking of students' work.</p>
<ul style="list-style-type: none"> <li>• output options including printers, file formats, magnetic/optical media and computer-based communication media</li> </ul>	<ul style="list-style-type: none"> <li>• output information to a specified device or medium</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher led discussion about responsibilities of designers and communicators to the community to be accountable for images and messages and the quality of their product</li> </ul>	<p>Students can recall and describe descriptions, definitions and concepts.</p>	<p>Observation and oral feedback.</p>
<p><i>Social and ethical issues</i></p> <ul style="list-style-type: none"> <li>• social and environmental implications of the graphics industry</li> <li>• different cultural approaches and sensitivities to the use and applications of graphical communication</li> </ul>	<ul style="list-style-type: none"> <li>• critically analyse graphical images for gender, social and cultural messages that may be conveyed</li> <li>• identify the cultural significance of graphical communications throughout history</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher and student discussion about the cultural significance of graphical communication, censorship and societal responsibilities.</li> <li>• Research and discuss past significant issues in areas such as racism and religion.</li> <li>• Discuss responsibility of the individual.</li> </ul>	<p>Students demonstrate understanding of history of graphical communication and research task.</p>	<p>Observation and oral feedback during completion of class tasks and discussions.</p>



Students learn about:	Students learn to:	Integrated learning experiences, instructions and assessment	Evidence of learning	Feedback
		<p><b>Weeks 9 and 10</b></p> <p><i>Final task</i></p> <ul style="list-style-type: none"><li>• Prepare a two view orthogonal drawing (front and side view) of a calculator or similar desktop device. An object of simplistic shape and size should be chosen, e.g. automatic pencil sharpener, digital clock.</li><li>• Prepare a pictorial representation of the same object. Photocopy the front view and render to then be used as an overlay. Photocopy pictorial view and render.</li><li>• Present as a set for final assessment.</li></ul>		