Stage 5 – Graphics Technology – Introduction to graphics

## Summary

The Introduction to Graphics unit is designed for students as the foundation to the Instrument Drawing module, providing them with the underpinning knowledge and skills to allow them to progress further. In ten weeks it will cover most of the mandatory outcomes for the unit. Orthogonal, Pictorial and Product Drawing have not been included in this unit and will require additional programming.

## Duration

Sample term – 10 weeks

Detail: 30 hours, 6 hours a fortnight

## Outcomes

* **GT5–1** communicates ideas graphically using freehand sketching and accurate drafting techniques
* **GT5–2** analyses the context of information and intended audience to select and develop appropriate presentations
* **GT5–3** designs and produces a range of graphical presentations
* **GT5–4** evaluates the effectiveness of different modes of graphical communications for a variety of purposes
* **GT5–5** identifies, interprets, selects and applies graphics conventions, standards and procedures in graphical communications
* **GT5–6** manages the development of graphical presentations to meet project briefs and specifications
* **GT5–9** identifies, assesses and manages relevant WHS factors to minimise risks in the work environment
* **GT5–10** demonstrates responsible and safe work practices for self and others
* **GT5–12** evaluates the impact of graphics on society, industry and the environment

[Graphics Technology Years 7-10](file:///D%3A/Corporate%20Files/graphics%20syllabus/Resources/educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/technologies/graphics-technology-2019) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2019

## Unit overview

In this unit students will complete a series of freehand and instrument drawings that will provide them with the skills and knowledge required to complete an individual design task. They will develop their skills through the completion of a series of exercises using both freehand and instrument drawing techniques.

This unit is designed to provide foundational skills and understanding of drawing conventions and instrument drawings.

The student workbook will introduce students to the Graphics industry, the techniques behind design and the application of design within our society. The completion of the workbook, with assistance from the teacher, will develop students’ skills to enable them to work independently and proficiently in the creation of applied geometry.

### Resources overview

The resources and links listed below are referenced within the program but is not an exhaustive list of resources available. Teachers can add to these resources as needed.

#### Physical Resources

* Introduction to graphics – student workbook
* A graphics room or classroom with access to technical drawing equipment

#### Websites

* Designers at work – [archive.maas.museum/designersatwork/about5a25.html?ID=9](http://archive.maas.museum/designersatwork/about5a25.html?ID=9)
* Alison Page designer profile for CUSP – [cusp-design.com/designer/alison-page](https://cusp-design.com/designer/alison-page/)

#### YouTube

* [Alison Page — CUSP: Designing into the Next Decade](https://www.youtube.com/watch?v=vr5il9srNio%20) (duration 5:14)

### Content

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| **Outcomes** | **Teaching and learning** | **Evidence of learning** | **Adjustments and registration** |
| **Weeks 1 and 2*** select and maintain drawing equipment and applying ordered approaches to work practices
* identify and interpret different methods of graphical representations in design
 | **Teacher:*** Introduces the course and outlines the content in the unit of work.
* Leads a discussion on the requirements of the course including the expectations and standards to be met.
* Uses individual and open-ended questioning to check student understanding.
* Leads class discussion on the glossary within the unit.
* Demonstrates, with the use of examples, particular drawing conventions, for example, orthogonal projection.

**Students:*** Complete the glossary using the information discussed and continue to fill in the descriptions throughout the unit of work as the terms are addressed.

**Possible adjustments:*** Assessment through questioning and the workbook can have the descriptions left in place.
* Remove pictures and have students physically draw each of the items.
* Partial removal of words from glossary description to create a closed passage.
* Leave the descriptions in the booklet and have students use highlighters to identify key features.
 | * Students responses demonstrate an understanding of the terms addressed.
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| * explore the role of professionals in the graphics industry
* identify the environmental effects of products and processes used in the graphics industry
 | **Teacher:*** Leads discussion on what is Graphics Technology and where is it used in society.
* Leads students in brainstorming on how graphics technologies are used in society.

**Students:*** Engage in discussion and answer teacher directed questions.

**Possible adjustments:*** Instead of a whole class discussion, break into small groups and assign roles.
* Provide an exemplar of the task as the benchmark for students to meet.
* Scaffold the response and supply an electronic or printed copy for students to frame their responses.
* As an extension add environmental factors to the consideration of vocational roles, for example, a packaging designer and consideration of the environment in regards to the environment.
 | * Students demonstrate their understanding through their contribution to the class discussion or by making notes in their workbook.
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| * critically analyse graphical images for gender, social and cultural messages that may be conveyed
* understand ethical responsibilities surrounding intellectual property, including Indigenous cultural and intellectual property
 | **Teacher:*** As a class, watch ‘[Alison Page — CUSP: Designing into the Next Decade’](https://www.youtube.com/watch?v=vr5il9srNio) (duration 5:14), and use the quotes by Alison Page (in the booklet) as the stimulus in the conversation
* Pauses the video as needed to highlight cultural impacts, considerations and reflection of culture through Alison's work. Write points on the board.
* Leads discussion on appropriate use of intellectual property (IP), such as imagery and societal or cultural considerations when designing.

**Students:*** Participate in class discussion.
* Answer questions ‘designing into the next decade’ in the workbook.

**Possible adjustments:*** Questions within the workbook may be done as a research task or small group task.
* Generate an additional worksheet with scaffolded questions.
* Students research and gather evidence of Alison’s work.
* Ask a local Artist or Designer to talk to the class to give their perspectives.
 | * Students demonstrate their understanding of how cultural influences have affected the designer's work through the class discussions and answers in their workbook.
* Students can identify the ethical and unethical use of IP within designs.
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| **Weeks 3 and 4*** identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
* identify Work Health and Safety (WHS) issues related to products and processes in the graphics industry and demonstrate safe and responsible work practices
 | **Teacher:*** Demonstrates the use of instrument drawing tools, discussing any Work Health and Safety concerns associated with Graphics. For example workstation setup, angle of boards, proper use of T Square and Dividers.
* Introduces the Risk Assessment Matrix and explains how it works.

**Students:*** Work in small groups to discuss and identify any WHS risks in the Graphics Room.
* Complete the risk assessment on Page 15.

**Possible adjustments:*** Assessment can include playing 'equipment bingo' by naming an instrument and the first to identify it and hold it up wins. An extra reward is given if they can link it to the glossary.
* Editing of the booklet to remove descriptors from the table and have students write in their own descriptions.
* Remove pictures and have students physically draw each of the items.
* Partial removal of words from Equipment table description to create a closed passage.
 | * Students demonstrate their understanding of the potential WHS risks through the completion of the Risk Assessment table.
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| * generate sketches to assist with problem-solving and communication of ideas
* identify and interpret different methods of graphical representations in design
* apply freehand drawing techniques to a range of simple orthogonal and pictorial drawing types
 | **Teacher:*** Demonstrates the completion of activities to students, explain expectations and the need for accuracy in their completion.
* Introduces the concept of three-dimensional representation in a two-dimensional format.
* Uses a block aid such as dice to demonstrate Isometric and Oblique faces, ensuring to go back over the rules governing these in the glossary.
* Uses a model of a car to help explain the second extension activity on page 20.

**Students:** * Complete the tasks ‘freehand drawing’ in the booklet, including the extension tasks.

**Possible adjustments:*** Have completed versions of the drawing sheets ready to give to students as examples.
* Allow students to place examples under their worksheets and use a lightbox to help them identify angles and compare to their own lines.
* Break up tasks into small pieces, slowly adding more detail to each drawing in stages of development.
* More confident students can work through the task independently.
 | * Students demonstrate a range of techniques and methods of communication by completing the activities on pages 16-20.
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| * identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
* apply rendering techniques to aid in the visualisation of a product or concept
 | **Teacher:*** Introduces the concept of tonal ranges and their creation.
* Demonstrates how to create them referring to hardness of pencil, thickness of lines, pressure and closeness of lines.
* Demonstrates light direction and light sources.
* Uses a lamp and an item on the bench to demonstrate shadow and how this could be shown in a drawing.

**Students:** * Complete drawings using appropriate rendering techniques.

**Possible adjustments:*** Provide students with completed exemplars to refer to when completing their work.
* Supply a range of rendering materials and techniques instead of just pencils and hatching; including charcoals, wax pens, shavings and rubbing techniques.
 | * Students utilise a range of tools and techniques to demonstrate their ability in rendering images by completing the activities in their workbooks.
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| **Week 5*** investigate Australian and international drawing standards and apply AS 1100 Technical Drawing standards in the production of drawings
* demonstrate measurement and accuracy through the use of scales in the production of drawings
* apply geometric construction techniques to graphical communication
 | **Teacher:*** Demonstrates standards for lettering and writing in Graphics
* Discusses how this relates to AS1100 standards and the need for accuracy and consistency
* Discusses measuring and the need for accuracy within graphics and its application to society, e.g. Manufacturing. Discuss measurements of straight and curved lines.

**Students:** * Complete lettering exercise according to standards and complete measurements accurately.

**Teacher:*** Lead discussion on true distances of inclined lines. Use a square based pyramid model to identify and show the difference between front and top views and their distance in relation to each other.

**Students:** * Complete the exercises provided.

**Possible adjustments:*** Have extra copies of the lettering conventions provided for students to practice on.
* Use larger 60cm rulers and have student’s measure objects within the room and their surrounding environment. Can be completed as a small group exercise and brought back to the group.
* Use a piece of dowel and place on an incline. Place a Square against the end of the incline and measure the distance to the table. Then lower the dowel onto the bench and see what the difference is.
* Have students draw and cut out a model of a square based pyramid to make their own model.
 | * Students demonstrate their understanding by accurately completing the activities in their workbooks while making sure they adhere to AS1100 standards.
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| * plan and manage graphics projects individually and collaboratively
* identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
 | **Teacher:*** Introduces equipment such as squares, drawing board, T squares and their setup for use. Refer back to the equipment description and use worksheets.
* Demonstrates the use of the squares to generate different hatching lines.

**Students:*** Complete the drawing exercises and create their own design ensuring all lines remain parallel to each other if drawn on the same plane.

**Possible adjustments:*** Provide students with completed exemplars to refer to.
* Have extra copies and have students compile the exercises freehand before using instruments so that the concept is understood before using the equipment.
* Provide an example design for the individual section if the student is experiencing difficulty in generating an idea.
 | * Students are able to demonstrate their correct use of a range of tools and techniques through the completion of the exercises in their workbooks.
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| **Week 6*** investigate Australian and international drawing standards and apply AS 1100 Technical Drawing standards in the production of drawings
* identify and apply design principles and processes in the development, production and evaluation of graphical presentations
* identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
 | **Teacher:*** Directed explanation of drawing conventions and the need for consistency.
* Discusses and show AS1100 standards for Graphics.
* Leads discussion on the need for consistency and the information required in title blocks.
* Demonstrates how to set up a drawing on the board and use the instruments to create a border and title block.
* Demonstrates how to complete the drawing task on page 32.

**Students:*** Accurately and neatly set up a page and draw borders and title block.
* Complete line conventions task as per instructions on Page 32.

**Possible adjustments:*** Generate drawing sheets with dots indicating borders and title blocks. Photocopy and give them to students so the exercise becomes a join the dots activity, focusing on neatness and accuracy.
* Provide students with completed exemplars to refer to.
 | * Students successfully use the AS1100 conventions to create a standard page layout with border and title block.
* Students demonstrate their understanding of previous work as well as the line conventions and lettering standards by producing a high-quality line conventions poster.
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| **Week 7*** plan and manage graphics projects individually and collaboratively
* apply geometric construction techniques to graphical communication
* identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
 | **Teacher:*** Demonstrates the correct procedure setting and using a compass.
* Demonstrates and explains the use of arcs to scribe shapes and to make equal divisions, for example scribing a square within a circle.

**Students:*** Complete drawing task as per instructions on Page 33 and 34.
* Complete the independent designing exercise on Page 35 using compass and squares.

**Possible adjustments:*** Provide students with completed exemplars to refer to.
* Provide examples of different designs for the individual section if the student is experiencing difficulty in generating an idea of their own.
 | * Students demonstrate their understanding of geometric construction techniques and the use of specific tools to complete the exercises in their workbooks.
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| **Week 8*** plan and manage graphics projects individually and collaboratively
* identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
* apply advanced techniques to pictorial projection
 | **Teacher:*** Discuss the concept of an ellipse and drawing a circle within an ellipse.
* Demonstrate their application in Oblique and Isometric projections to accurately convey information and detail in a drawing. Show examples where possible.
* Demonstrate the gridding pattern and using that to map the characteristics of the circle (or any picture or shape) and using that to reproduce the shape.

**Students:*** Complete the sample exercise on page 36 then complete the challenge on page 37 independently.

**Possible adjustments:*** Provide students with completed exemplars to refer to.
* Provide a copy of Page 37 with dot points on the boxes provided so that students can accurately establish a grid to start.
 | * Students demonstrate their understanding of isometric projection techniques and the use of specific tools to complete the exercises in their workbooks.
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| * plan and manage graphics projects individually and collaboratively
* apply geometric construction techniques to graphical communication
* identify and apply a range of tools, techniques and technologies to present product information graphically in a clear and innovative manner
 | **Teacher:*** Demonstrates each of the drawings on pages 38 to 40.
* Divides the task into small sections and has students follow each step as it is completed so they can replicate this in their drawings.

**Students:** * Draw up a series of title block sheets ready to complete the exercises.
* Complete all exercises on their prepared sheets and submit them to the teacher for feedback and revisions.

**Possible adjustments:*** Read through the instruction on each drawing example with students and have them highlight each step in a different colour along, whilst highlighting each section of the drawing in the same colour to correlate the two.
* More advanced students can work through the sheets independently.
 | * Students successfully use the AS1100 conventions to create a standard page layout with border and title block.
* Students demonstrate their understanding of geometric construction techniques and the use of specific tools to complete the exercises on their prepared sheets.
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| **Weeks 9 and 10*** plan and manage graphics projects individually and collaboratively
* identify and apply design principles and processes in the development, production and evaluation of graphical presentations
* generate sketches to assist with problem-solving and communication of ideas (ACTDEP049)
* apply geometric construction techniques to graphical communication
* apply rendering techniques to aid in the visualisation of a product or concept
 | **Teacher:*** Reads through the Design Challenge with the students and asks them several questions to clarify understandings.
* Explicitly goes through the marking criteria, showing examples if possible.
* Gets students to use highlighters or underline key points in the marking criteria for them to address in their task.
* Discusses the importance of each stage of design development and realisation.

**Students:*** Work in small groups to develop answers as to why evaluation is so important and why it should be carried out at all stages of development, not just the end.
* Individually complete the task and submit to the teacher for marking.

**Possible adjustments:*** Provide an opportunity for students to work collaboratively instead of individually to complete the Design Challenge.
* Reverse engineer the project by giving the students an existing logo and ask them to re-design it.
 | * Students demonstrate a range of skills and techniques in designing and sketching to communicate their ideas.
* Students demonstrate their understanding of the concepts covered by using geometric construction techniques and rendering to present their final design.
* Students can articulate the reasons for evaluation in their small groups and then perform their own evaluation independently.
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### Evaluation

Evaluation of learning activities should be an ongoing process that happens throughout the delivery of this unit. Teachers should document their evaluation of learning activities throughout the program. The space provided below is to evaluate the overall unit of work.