Graphics Planning

Action Verbs

Analyse: study or examine something in detail, break down in order to bring out the essential elements or structure; identify parts and relationships, and to interpret information to reach conclusions

Apply: select and use information and/or knowledge and understanding to explain a given situation or real circumstances

Appreciate: recognise the meaning of, have a practical understanding of

Communicate: use visual gestural, verbal or other signs to share meaning or exchange information; interaction between sender and recipient; both work together to understand

Construct: develop information in a diagrammatic or logical form; not by factual recall but by analogy or by using and putting together information

Create: process and give form to the topic of what is to be created using selected methods and material and/or to give the material used a new form

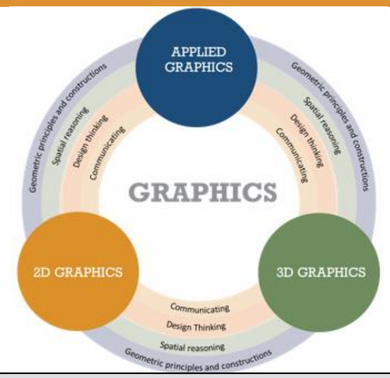
Demonstrate: prove or make clear by reasoning or evidence, illustrating with examples or practical application

Derive: to be formulate or prepare from concepts

Develop: advance a piece of work or an idea from an initial state to a more advanced state

Evaluate: (data) collect and examine data to make judgements and appraisals; describe how evidence supports or does not support a conclusion in an inquiry or investigation; identify the limitations of data in conclusions; make judgements about the ideas, solutions or methods

QR code for specification



	Strand 1: 2D Graphics- In this strand, students will engage with, understand and apply the fundamental concepts and principles of 2D constructions, 2D shapes and projection systems. Throughout their studies, students will gain an appreciation of the application of 2D graphics to problem solving and develop an understanding of the role of 2D graphics in the creation of 3D objects and representations. Students should, as a result, be able to create clear representations of objects in space and accurately represent these in two-dimensions.	**Strand 2: 3D Graphics-** In this strand, students will engage with, understand and use the fundamental concepts and principles underpinning 3D objects, modelling systems and graphical conventions. This strand is of specific importance in developing each student's ability in visual imagery and representation. Students should as a result be able to accurately represent objects in three dimensions and apply these skills to problem solving	**Strand 3: Applied Graphics-** In this strand, students will draw on the knowledge, principles and techniques developed through the 2D Graphics and 3D Graphics strands to create and communicate solutions and information graphically. Students should be encouraged to investigate their physical environment and to apply the principles of 2D Graphics and 3D Graphics to the solution of a variety of problems. Students should be able to select the most appropriate methods to communicate their solutions and solve these problems, both in terms of their selection of graphical media and the mechanism for their utilisation.
	Students should be able to:	**Students should be able to:**	**Students should be able to:**
Spatial Reasoning- The learning outcomes from the different strands that are associated with this element encourage students to investigate a range of shapes, graphical information, objects and artefacts to assist students in developing their spatial ability. The learning outcomes aid the student in developing their abilities from initially recognising spatial properties to visualising their manipulation.	1.1 **visualise** the manipulation of 2D shapes 1.2 **analyse** graphical information for the planning of a 2D solution 1.3 **derive** 2D solutions using appropriate media	2.1 **visualise** the manipulation of 3D objects 2.2 **analyse** graphical information for the planning of a *3D solution* 2.3 **derive** *3D solutions* using appropriate media	3.1 **recognise** 2D and 3D features in everyday objects and artefacts 3.2 **appreciate** the hidden features of an object or an artefact necessary for its representation 3.3 **demonstrate** their spatial understanding by modelling and/or simulation
Design Thinking- The learning outcomes from the different strands that are associated with this element encourage students to use their understanding of Graphics to develop ideas and solutions to everyday problems. Students will be develop the creative and innovative skills needed to develop and communicate their design solutions, influenced by their learning under the three strands.	1.4 **appreciate** the role of 2D graphics in the creation of solutions 1.5 **illustrate** ideas using free-hand sketches to accurately communicate their thought process 1.6 **apply** their understanding of geometric principles to solve problems 1.7 **interpret** and **create** graphical representations of data/information	2.4 **appreciate** the role of 3D graphics in the creation of solutions 2.5 **develop** ideas using freehand sketches and other media to accurately communicate the thought process 2.6 **apply** their understanding of 3D principles to solve problems 2.7 **construct** solutions to presented and/or defined problems	3.4 **solve** real-context and abstract problems using graphical techniques 3.5 **analyse** and **evaluate** both their own work, and the work of others
Communicating- The learning outcomes from the different strands that are associated with this element encourage students to communicate through appropriate media to relay technical information, and to design ideas and solutions to problems. Emphasis should be placed on developing the students' abilities to communicate through a range of graphical media and make decisions on the appropriateness of specific media relative to specific stages of a design process.	1.8 **communicate** the progression of ideas and thinking during the course of an activity using a variety of media 1.9 **represent** 3D information using *2D conventions*	2.8 **construct** a *3D representation* of an artefact or abstract idea using a variety of media and methods 2.9 **communicate** the progression of ideas/thinking during the course of an activity using a variety of media	3.6 **develop** design ideas/solutions through modelling and prototyping using a variety of media 3.7 **use** computer-aided graphics to communicate design solutions effectively 3.8 **represent** graphically their approach to a design task 3.9 **apply** a variety of rendering and presentation techniques to enhance the communication of solutions
Geometric principles and constructions- The learning outcomes from the different strands that are associated with this element encourage students to execute their understanding of geometric shapes and objects in the construction of two-dimensional and three-dimensional representations and in the solving of geometric problems. Students will adapt their knowledge from classroom activities to explore the role of geometric principles and constructions in the natural world around them.	1.10 **understand** the properties of geometric shapes 1.11 **appreciate** the application of *geometric constructions* in the study of other areas 1.12 **construct** 2D solutions accurately in accordance with *graphical conventions*	2.10 **understand** the properties of geometric objects and surfaces 2.11 **appreciate** the application of *geometric principles* in the study of other areas 2.12 **generate** and **develop** design ideas using appropriate *geometric principles* and *constructions* 2.13 **apply** *geometric principles* to construct accurate *3D solutions* in accordance with *graphical conventions*	3.10 **investigate** and **apply** the principles of *plane and descriptive geometries* to create solutions 3.11 **investigate** how *geometric principles and constructions* found in the natural world have provided inspiration for human applications 3.12 **develop** an appropriate *graphical representation* of a solution to a *contextual problem* chosen by them

2D convention	First angle orthographic, oblique, isometric drawing, axonometric	***Graphical Conventions***	Current standards, conventions and practices associated with drawing and illustration
3D representation	A view which displays a physical object or an abstract concept in a form which reflects length, depth and height.	***Contextual problem***	A problem which draws on a real world experience, situation or application
3D solution	A solution to a specific or abstract problem derived and/or presented using 3D technique/s.	***Geometric constructions***	The accurate drawing of points, lines, circles, angles, bisectors, divisions and other shapes using standard drawing instruments
Plane & Descriptive geometries	The graphical representation, description and analysis of relationships between points, lines and planes in space. The graphical representation of three dimensional objects in two dimensions.	***Geometric principles***	The fundamental principles which define and describe the nature of points, lines and planes together with the two dimensional and three dimensional shapes, solids, projection systems and constructions derived from them.

Action Verbs

Evaluate: (ethical judgement) collect and examine evidence to make judgements and appraisals; describe how evidence supports or does not support a judgement; identify the limitations of evidence in conclusions; make judgements about the ideas, solutions or methods

Generate: to produce or create

Illustrate: (graphically) use drawings to describe something

Illustrate: use examples to describe something

Interpret: use knowledge and understanding to recognise trends and draw conclusions from given information

Interpret: (aesthetic) assign meaning to objects on the basis of observations and contextual knowledge; translate the effect of an image into words by reasoning and explaining on the basis of reflection and understanding why the image is how it is and is not different.

Investigate: observe, study, or make a detailed and systematic examination, to establish facts and reach new conclusions

Recognise: identify facts, characteristics or concepts that are critical (relevant/ appropriate) to the understanding of a situation, event, process or phenomenon

Represent: bringing clearly and distinctively to mind by use of description or imagination

Solve: find an answer through reasoning

Understand: have and apply a well-organised body of knowledge

Use: apply knowledge or rules to put theory into practice; employ something in a targeted way

Visualise: make something visible to the mind or imagination something that is abstract or not visible or present to the eye

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Consider the age, stage and prior learning of the students.

What learning do we want to focus on?

Explore both the strands and elements when choosing learning outcomes.

Identify the learning outcomes for your unit of learning.

Identify the key learning for students using action verbs to support your thinking.

Consider how we will assess and report evidence of learning

Develop ideas for how students could experience this learning.

How will I know they are learning?

Using your own classroom context, what methodologies and resources will support students in experiencing the learning outcomes.

Ensure assessment aligns with the learning outcomes and their action verbs