JUNIOR CYCLE GRAPHICS OVERVIEW - ACADEMIC YEAR 2022/2023

FIRST YEAR

Term 1	Strands:	Unit Of Learning:	Learning Outcomes – Students should be able to…
	Getting Started in Graphics	Using drawing equipment and preparing a drawing sheet	**1.1** Visualise the manipulation of 2D shapes **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.11** Appreciate the application of geometric constructions in the study of other areas
			3.9 Apply a variety of rendering and presentation techniques to enhance the communication of solutions
	Inclined Lines	Using equipment to draw inclined lines and understanding concepts relating to inclined lines and angles	**1.2** Analyse graphical information for the planning of a 2D solution **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.6** Apply their understanding of geometric principles to solve problems **1.7** Interpret and create graphical representations of data/information **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			3.5 Analyse and evaluate both their own work and the work of others **3.8** Represent graphically their approach to a design task
Mid-Term Break			

	Angles	Using protractors to measure and construct angles and solving problems relating to angles	**1.1** Visualise the manipulation of 2D shapes **1.2** Analyse graphical information for the planning of a 2D solution **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			3.5 Analyse and evaluate both their own work and the work of others **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
	Plane Figures: Triangles	Constructing triangles and describing and identifying their properties	**1.2** Analyse graphical information for the planning of a 2D solution **1.6** Apply their understanding of geometric principles to solve problems **1.10** Understand the properties of geometric shapes **1.12** Construct 2D solutions accurately in accordance with graphical conventions **3.1** Recognise 2D and 3D features in everyday objects and artefacts
Christmas Break			
Term 2	Plane Figures: Quadrilaterals	Constructing quadrilaterals and describing and identifying their properties	**1.1** Visualise the manipulation of 2D shapes **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.10** Understand the properties of geometric shapes **1.12** Construct 2D solutions accurately in accordance with graphical conventions **3.5** Analyse and evaluate both their own work and the work of others

	Plane Figures: Polygons	Constructing polygons and describing and identifying their properties	**1.1** Visualise the manipulation of 2D shapes **1.3** Derive 2D solutions using appropriate media **1.5** Illustrate ideas using freehand sketches to accurately communicate their thought process **1.6** Apply their understanding of geometric principles to solve problems **1.10** Understand the properties of geometric shapes **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			3.4 Solve real-context and abstract problems using graphical techniques **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 **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions
February Mid-Term Break			
	Plane Figures: Circles 1	Constructing circles and describing and identifying their properties	**1.1** Visualise the manipulation of 2D shapes **1.6** Apply their understanding of geometric principles to solve problems **1.10** Understand the properties of geometric shapes **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.5** Analyse and evaluate both their own work and the work of others
Easter Break			

Term 3	Orthographic Projection 1	Developing spatial reasoning and visualisation skills by looking at how 3D objects can be presented in 2D (orthographic projection)	**1.9** Represent 3D information using 2D conventions
			2.1 Visualise the manipulation of 3D objects **2.4** Appreciate the role of 3D graphics in the creation of solutions **2.6** Apply their understanding of 3D principles to solve problems
			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
Summer Break			

JUNIOR CYCLE GRAPHICS OVERVIEW - ACADEMIC YEAR 2022/2023

SECOND YEAR

Term 1	**Strands:**	**Unit Of Learning:**	**Learning Outcomes – Students should be able to…**
	Freehand Sketching 1	Developing sketching and visualisation skills	**1.2** Analyse graphical information for the planning of a 2D solution **1.5** Illustrate ideas using freehand sketches to accurately communicate their thought process **1.6** Apply their understanding of geometric principles to solve problems **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
			2.1 Visualise the manipulation of 3D objects **2.5** Develop ideas using freehand sketches and other media to accurately communicate the thought process **2.8** Construct a 3D representation of an artefact or abstract idea using a variety of media and methods **2.12** Generate and develop design ideas using appropriate geometric principles and constructions
			3.5 Analyse and evaluate both their own work and the work of others **3.9** Apply a variety of rendering and presentation techniques to enhance the communication of solutions
	Computer-Aided Design (CAD) 1	Developing CAD skills and an introduction to	**1.7** Interpret and create graphical representations of data/information **1.9** Represent 3D information using 2D conventions

		dynamic modelling and design thinking in CAD	**2.1** Visualise the manipulation of 3D objects **2.4** Appreciate the role of 3D graphics in the creation of solutions **2.8** Construct a 3D representation of an artefact or abstract idea using a variety of media and methods **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
			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.3** Demonstrate their spatial understanding by modelling and/or simulation **3.4** Solve real-context and abstract problems using graphical techniques **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
Mid-Term Break			
	Plane Figures: Circles 2	Drawing tangents to circles, circles in contact and tangent arcs between circles	**1.1** Visualise the manipulation of 2D shapes analyse graphical information for the planning of a 2D solution **1.6** Apply their understanding of geometric principles to solve problems **1.10** Understand the properties of geometric shapes **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			3.4 Solve real-context and abstract problems using graphical techniques **3.8** Represent graphically their approach to a design task **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions

	The Ellipse	Constructing ellipses and describing and identifying their properties	**1.1** Visualise the manipulation of 2D shapes **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.5** Illustrate ideas using freehand sketches to accurately communicate their thought process **1.6** Apply their understanding of geometric principles to solve problems
			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.9** Apply a variety of rendering and presentation techniques to enhance the communication of 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 of their choice
Christmas Break			
Term 2	Pictorial Drawing	Representing 3D objects in 2D (oblique and isometric)	**1.9** Represent 3D information using 2D conventions
			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 **2.4** Appreciate the role of 3D graphics in the creation of solutions **2.6** Apply their understanding of 3D principles to solve problems **2.7** Construct solutions to presented and/or defined problems **2.8** Construct a 3D representation of an artefact or abstract idea using a variety of media and methods **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

			3.1 Recognise 2D and 3D features in everyday objects and artefacts
February Mid-Term Break			
	Freehand Sketching 2	Developing sketching skills and drawing in one- and two-point perspective	**1.6** Apply their understanding of geometric principles to solve problems **1.9** Represent 3D information using 2D conventions
			2.1 Visualise the manipulation of 3D objects **2.5** Develop ideas using freehand sketches and other media to accurately communicate the thought process **2.8** Construct a 3D representation of an artefact or abstract idea using a variety of media and methods
			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.5** Analyse and evaluate both their own work and the work of others **3.9** Apply a variety of rendering and presentation techniques to enhance the communication of solutions
	How to Design and Present Ideas Graphically	Designing objects by applying the design cycle and presenting designs graphically	**1.7** Interpret and create graphical representations of data/information communicate the progression of ideas and thinking during the course of an activity using a variety of media
			2.5 Develop ideas using freehand sketches and other media to accurately communicate the thought process **2.9** Communicate the progression of ideas/ thinking during the course of an activity using a variety of media

			3.5 Analyse and evaluate both their own work and the work of others **3.6** Develop design ideas/solutions through modelling and prototyping using a variety of media **3.8** Represent graphically their approach to a design task **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 of their choice
Easter Break			
Term 3	Developments 1	Developing spatial reasoning and visualisation skills by looking at how 3D objects can be presented in 2D (developments)	**1.2** Analyse graphical information for the planning of a 2D solution **1.6** Apply their understanding of geometric principles to solve problems **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 **1.12** Construct 2D solutions accurately in accordance with graphical conventions
			2.1 Visualise the manipulation of 3D objects **2.4** Appreciate the role of 3D graphics in the creation of solutions **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

			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 **3.6** Develop design ideas/solutions through modelling and prototyping using a variety of media **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions **3.12** Develop an appropriate graphical representation of a solution to a contextual problem of their choice
Summer Break			

JUNIOR CYCLE GRAPHICS OVERVIEW - ACADEMIC YEAR 2022/2023

THIRD YEAR

Term 1	**Strands:**	**Unit Of Learning:**	**Learning Outcomes – Students should be able to…**
	Conic Sections: The Parabola	Constructing parabolas and describing and identifying their properties	**1.1** Visualise the manipulation of 2D shapes **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.5** Illustrate ideas using freehand sketches to accurately communicate their thought process **1.10** Understand the properties of geometric shapes **1.11** Appreciate the application of geometric constructions in the study of other areas
			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 **3.8** Represent graphically their approach to a design task **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
Mid-Term Break			
	Computer-Aided Design (CAD) 2	Developing CAD skills and an introduction to	**1.6** Apply their understanding of geometric principles to solve problems **1.9** Represent 3D information using 2D conventions

		dynamic modelling and design thinking in CAD	**2.1** Visualise the manipulation of 3D objects **2.3** Derive 3D solutions using appropriate media **2.8** Construct a 3D representation of an artefact or abstract idea using a variety of media and methods **2.0** Communicate the progression of ideas/thinking during the course of an activity using a variety of media **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
			3.3 Demonstrate their spatial understanding by modelling and/or simulation **3.3** Solve real-context and abstract problems using graphical techniques **3.5** Analyse and evaluate both their own work and the work of others **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 **3.9** Apply a variety of rendering and presentation techniques to enhance the communication of solutions
	Orthographic Projection 2	Developing spatial reasoning and visualisation skills by looking at how 3D objects can be presented in 2D (orthographic projection)	**1.9** Represent 3D information using 2D conventions **1.10** Understand the properties of geometric shapes
			2.1 Visualise the manipulation of 3D objects **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 **2.9** Communicate the progression of ideas/thinking during the course of an activity using a variety of media

			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.4** Solve real-context and abstract problems using graphical techniques **3.9** Apply a variety of rendering and presentation techniques to enhance the communication of solutions
Christmas Break			
Term 2	Developments 2	Developing spatial reasoning and visualisation skills by looking at how 3D objects can be presented in 2D (developments)	**1.2** Analyse graphical information for the planning of a 2D solution **1.3** Derive 2D solutions using appropriate media **1.3** Appreciate the role of 2D graphics in the creation of solutions **1.6** Apply their understanding of geometric principles to solve problems **1.9** Represent 3D information using 2D conventions **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
			2.1 Visualise the manipulation of 3D objects **2.4** Appreciate the role of 3D graphics in the creation of solutions **2.7** Construct solutions to presented and/or defined problems **2.10** Understand the properties of geometric objects and surfaces
			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 **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions
February Mid-Term Break			

Term 2	Solids in Contact	Drawing solids in contact orthographically and locating points of contact	**1.6** Apply their understanding of geometric principles to solve problems **1.9** Represent 3D information using 2D conventions
			2.1 Visualise the manipulation of 3D objects **2.2** Analyse graphical information for the planning of a 3D solution **2.4** Appreciate the role of 3D graphics in the creation of solutions **2.6** Apply their understanding of 3D principles to solve problems **2.7** Construct solutions to presented and/or defined problems **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
			3.5 Analyse and evaluate both their own work and the work of others **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions
	Orthographic Projection 3	Developing spatial reasoning and visualisation skills by looking at how 3D objects can be presented in 2D (orthographic projection)	**1.6** Apply their understanding of geometric principles to solve problems **1.9** Represent 3D information using 2D conventions
			2.1 Visualise the manipulation of 3D objects **2.9** Communicate the progression of ideas/thinking during the course of an activity using a variety of media **2.10** Understand the properties of geometric objects and surfaces **2.13** Apply geometric principles to construct accurate 3D solutions in accordance with graphical conventions

			3.5 Analyse and evaluate both their own work and the work of others **3.10** Investigate and apply the principles of plane and descriptive geometries to create solutions
Easter Break			
Term 3	Transformation Geometry and Surface Rotation	Performing transformations and drawing orthographic projections of rotated surfaces	**1.1** Visualise the manipulation of 2D shapes **1.2** Analyse graphical information for the planning of a 2D solution **1.4** Appreciate the role of 2D graphics in the creation of solutions **1.9** Represent 3D information using 2D conventions **1.10** Understand the properties of geometric shapes **1.11** Appreciate the application of geometric constructions in the study of other areas
			2.10 Understand the properties of geometric objects and surfaces
			3.1 Recognise 2D and 3D features in everyday objects and artefacts **3.3** Demonstrate their spatial understanding by modelling and/or simulation **3.8** Represent graphically their approach to a design task
Summer Break			