


**Design & Technology Department – Year 8**

 <b>Shirley High Curriculum Map</b>	<i>To develop basic skills and understanding in the use and application of CAD and 3D Manual Drawing techniques including colour rendering and the manufacture of nets to model 3D shapes in card. To learn about Wood and Manmade boards including sources and processes and social/environmental issues. To learn about Forces and Structures including research into natural structures (biomimicry) To learn to design a bridge structure then model, manufacture and use destructive testing to evaluate the design. To learn to develop basic design and manufacture skills in wood and manufactured boards including 2D drawing of design ideas and development of 2D and 3D final designs; understanding methods for joining wood; developing skills in the safe use of hand tools and workshop equipment for cutting, joining and finishing; evaluating finished products for quality and accuracy relative to designs.</i>					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Theme/Topic/Skill: Core Skills, 2D Design and Structures	Theme/Topic/Skill: Structures and Picture Frame	Theme/Topic/Skill: Core Skills, 2D Design and Structures	Theme/Topic/Skill: Structures and Picture Frame	Theme/Topic/Skill: Core Skills, 2D Design and Structures	Theme/Topic/Skill: Structures and Picture Frame
Why Now?	Learners will be introduced to the key concepts of structures, drawing skill and basic 2D CAD. This builds on their studies in the Year 7 curriculum and provides opportunities for retrieval. To enable students to create structures and use their drawing skills to present their work.	Learners will have an opportunity to look closely at different types of wood. To enable pupils to acquire basic wood skills through marking, measuring, making and finishing a picture frame.	Learners will be introduced to the key concepts of structures, drawing skill and basic 2D CAD. This builds on their studies in the Year 7 curriculum and provides opportunities for retrieval. To enable students to create structures and use their drawing skills to present their work.	Learners will have an opportunity to look closely at different types of wood. To enable pupils to acquire basic wood skills through marking, measuring, making and finishing a picture frame.	Learners will be introduced to the key concepts of structures, drawing skill and basic 2D CAD. This builds on their studies in the Year 7 curriculum and provides opportunities for retrieval. To enable students to create structures and use their drawing skills to present their work.	Learners will have an opportunity to look closely at different types of wood. To enable pupils to acquire basic wood skills through marking, measuring, making and finishing a picture frame.
Fundamental Concepts	3D drawing and sketching, Perspective drawing 2D CAD practice Man-made Shell and Frame structures. Forces: Compression, Tension, Bending, Torsion and Shear.	Structures and loads. Design and make project make in wood and types of wood joints	3D drawing and sketching, Perspective drawing 2D CAD practice Man-made Shell and Frame structures. Forces: Compression, Tension, Bending, Torsion and Shear.	Structures and loads. Design and make project make in wood and types of wood joints	3D drawing and sketching, Perspective drawing 2D CAD practice Man-made Shell and Frame structures. Forces: Compression, Tension, Bending, Torsion and Shear.	Structures and loads. Design and make project make in wood and types of wood joints
Students will...	<p>Recognise Shell and Frame, Natural and Man-made structures.</p> <p>Understand types of forces : Compression, Tension, Bending, Torsion, Shear, Static and Dynamic forces.</p> <p>Recognising Existing Bridge design structures to support loading : Suspension, Cantilever, beam &amp; Arch. See good examples and bridge failures.</p> <p>Understanding the concept of reinforcement to increase Strength to weight ratio by joining and combining materials and by structural design such as triangulation.</p> <p>Build basic Design and problem solving skills : Design a bridge to span of 700 mm and carry the maximum load given limited resources</p> <p>4mm x 4mm softwood strips, string and card. Working safely in teams. Following plans, measuring accurately, cutting and gluing with a hot glue gun.</p>	<p>Destructive testing - testing bridges with loads until failure.</p> <p>Evaluating bridge designs and strength to weight ratios.</p> <p>Recognise types of wood and manufactured board and consider their source and environmental issues in their production or use. Understand the structure, properties, and uses for wood and manufactured boards.</p> <p>Develop Design Ideas on A3 sheet. Recognise good and bad design ideas and construction techniques.</p> <p>Demonstrate hand skills. Marking out and cutting to length and cutting rebate joints.</p> <p>Understand and demonstrate gluing joints using PVA glue.</p> <p>Demonstrate marking out and cutting acrylic and MDF for backs, clips, stands and additional features.</p> <p>Demonstrate finishing methods by sanding, staining, painting . Complete 'Basic Frame'.</p> <p>Evaluation of practical work against design and assess level of skill End of unit test.</p>	<p>Recognise Shell and Frame, Natural and Man-made structures.</p> <p>Understand types of forces : Compression, Tension, Bending, Torsion, Shear, Static and Dynamic forces.</p> <p>Recognising Existing Bridge design structures to support loading : Suspension, Cantilever, beam &amp; Arch. See good examples and bridge failures.</p> <p>Understanding the concept of reinforcement to increase Strength to weight ratio by joining and combining materials and by structural design such as triangulation.</p> <p>Build basic Design and problem solving skills : Design a bridge to span of 700 mm and carry the maximum load given limited resources</p> <p>4mm x 4mm softwood strips, string and card. Working safely in teams. Following plans, measuring accurately, cutting and gluing with a hot glue gun.</p>	<p>Destructive testing - testing bridges with loads until failure.</p> <p>Evaluating bridge designs and strength to weight ratios.</p> <p>Recognise types of wood and manufactured board and consider their source and environmental issues in their production or use. Understand the structure, properties, and uses for wood and manufactured boards.</p> <p>Develop Design Ideas on A3 sheet. Recognise good and bad design ideas and construction techniques.</p> <p>Demonstrate hand skills. Marking out and cutting to length and cutting rebate joints.</p> <p>Understand and demonstrate gluing joints using PVA glue.</p> <p>Demonstrate marking out and cutting acrylic and MDF for backs, clips, stands and additional features.</p> <p>Demonstrate finishing methods by sanding, staining, painting . 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Following plans, measuring accurately, cutting and gluing with a hot glue gun.</p>	<p>Destructive testing - testing bridges with loads until failure.</p> <p>Evaluating bridge designs and strength to weight ratios.</p> <p>Recognise types of wood and manufactured board and consider their source and environmental issues in their production or use. Understand the structure, properties, and uses for wood and manufactured boards.</p> <p>Develop Design Ideas on A3 sheet. Recognise good and bad design ideas and construction techniques.</p> <p>Demonstrate hand skills. Marking out and cutting to length and cutting rebate joints.</p> <p>Understand and demonstrate gluing joints using PVA glue.</p> <p>Demonstrate marking out and cutting acrylic and MDF for backs, clips, stands and additional features.</p> <p>Demonstrate finishing methods by sanding, staining, painting . Complete 'Basic Frame'.</p> <p>Evaluation of practical work against design and assess level of skill End of unit test.</p>
Language for Life (Key terms /Vocabulary)	Isometric, Oblique, Perspective Sketching Compression, Bending, Torsion and Shear. Static and Dynamic Force	Hardwood, Softwood, Man-Made Board. Rebate Joints, Tenon saw, Scroll saw, Coping saw, bench hook, Marking gauge. Isometric design, Colour rendering	Isometric, Oblique, Perspective Sketching Compression, Bending, Torsion and Shear. Static and Dynamic Force	Hardwood, Softwood, Man-Made Board. Rebate Joints, Tenon saw, Scroll saw, Coping saw, bench hook, Marking gauge. Isometric design, Colour rendering	Isometric, Oblique, Perspective Sketching Compression, Bending, Torsion and Shear. Static and Dynamic Force	Hardwood, Softwood, Man-Made Board. Rebate Joints, Tenon saw, Scroll saw, Coping saw, bench hook, Marking gauge. Isometric design, Colour rendering
Extended writing Opportunities						
Maths Across the Curriculum	Geometry, Measurement, Ratios, measurements, triangulation, division & multiplication	Ratios, measurements, triangulation, division & multiplication Measuring to length	Geometry, Measurement, Ratios, measurements, triangulation, division & multiplication	Ratios, measurements, triangulation, division & multiplication Measuring to length	Geometry, Measurement, Ratios, measurements, triangulation, division & multiplication	Ratios, measurements, triangulation, division & multiplication Measuring to length
Links to careers/ aspirations	Engineering, Architecture, Design, Engineering, Architecture, Design	Engineering, Architecture, Design Joinery, fitting, Architecture	Engineering, Architecture, Design, Engineering, Architecture, Design	Engineering, Architecture, Design Joinery, fitting, Architecture	Engineering, Architecture, Design, Engineering, Architecture, Design	Engineering, Architecture, Design Joinery, fitting, Architecture
Cultural Capital	Zaha Hadid Gallery, Mathematics Gallery Science Museum, Millennium Footbridge	The Shard, Design Museum, Centre for Alternative Technology	Zaha Hadid Gallery, Mathematics Gallery Science Museum, Millennium Footbridge	The Shard, Design Museum, Centre for Alternative Technology	Zaha Hadid Gallery, Mathematics Gallery Science Museum, Millennium Footbridge	The Shard, Design Museum, Centre for Alternative Technology
Practical Application of Skills	CAD & drawing, Marking out Construction & use of Glue gun	Marking out Construction & use of Glue gun	CAD & drawing, Marking out Construction & use of Glue gun	Marking out Construction & use of Glue gun	CAD & drawing, Marking out Construction & use of Glue gun	Marking out Construction & use of Glue gun

N.B. This map represents delivery for a group of students to be completed after two terms, This delivery is repeated for Spring and Summer term.