Curriculum Progression Map – Design and Technology

Design and Technology Intent (summary):

Our curriculum has been developed to allow students to build the fundamental knowledge and skills to leave with a grounding of what Design and Technology is and how it is linked to the world around us. DT is an inspiring, rigorous and practical subject that uses creativity and imagination. Students acquire a broad range of subject knowledge which links into Maths, Art, Science and Computing. Students learn how to take risks, be resourceful and enterprising, leading on to employment, creativity and wealth and well- being of the nation.

Prior learning required to access Upper Key Stage 2:

Maths skills specifically place value, subtraction, addition, multiplication and division to be able to measure correctly. English language to be able to record information and IT skills to research and develop ideas, develop creative technical and practical tasks.

Key Stage 2 Summary:

Develop creative, technical, practical ability whilst applying knowledge, skill and understanding. Design through research functional products for themselves and others using mock-ups where appropriate.

Select from and use a range of tools and equipment and construction materials to perform practical tasks e.g., cutting, shaping and joining and finishing.

Key Stage 3 Summary:

Develop creative, technical, practical ability whilst applying knowledge, skill and understanding. Design through research functional products for themselves and others using mock-ups where appropriate.

Select from and use a range of tools and equipment to perform practical tasks e.g. cutting, shaping and joining and finishing. All work learned in KS3 leads into a KS4 qualification and links to further Education and Careers.

Key Stage 4 Summary:

Follow the NCFE L1 or 2 Qualification Yr. 10 & 11

Students apply knowledge and skills developed in key stage three to produce a portfolio of evidence that demonstrates the design process from inception to evaluation. Students will continue to develop knowledge and skills in this subject which will allow them to explore design and technology further at post sixteen.

SAIL Academy Curriculum, Skills and Intent SECONDARY Design and Technology

Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Year 7	**Knowledge & Skills:** Common tools used in the workshop including, rule, try square, tenon saw, bench hook and clamps. PPE What is it? Health and safety using tools and working with others. Introduction to belt sander. Behaviour - how to communicate and work responsibly and safely with others. Develop subject specific language.		**<u>Ring/Spinner ring</u>** **Knowledge & Skills:** Common hand tools used in the workshop to manipulate metal. PPE used for hot working. Health and safety using tools, working with others and hot working. Introduction to jewellery making. How to communicate and work responsibly and safely with others. Develop subject specific language in metallurgy.		**<u>Graphics 1</u>** **Knowledge & Skills:** Why designers communicate ideas. How designers communicate ideas Isometric or oblique drawing. One- and two-point perspective. 2D to 3D shading	
	Key Learning Outcomes: Pupils will learn to measure and mark materials (wood). Pupils will learn to cut straight with a tenon saw Pupils will learn to sand using hand sanding technique and belt sander to finish a product aesthetically and ergonomically. Pupils will know the importance of using the correct PPE. Pupils will finish a product to meet a design brief. **Assessment:** Workshop skills rubric.		**Key Learning Outcomes:** Pupils will learn to measure and mark materials (metal). Pupils will learn to cut straight with a hack saw and or piercing saw. Pupils will learn to manipulate metal with specialist tools. Pupils will learn to anneal metals to make them malleable and ductile. Pupils will learn to solder metal joins. Pupils will learn to manipulate metal into a ring. Pupils will learn to prepare metal surface for a polished finish. **Assessment:** Metal workshop skills rubric.		**Key Learning Outcomes:** Pupils will learn to sketch free hand. Pupils will be introduced to isometric and or oblique drawing techniques. Pupils will be introduced to one- and two-point perspective drawing techniques. Pupils will be introduced to shading as a technique to show 3D form. **Assessment:** Graphic communication 1 MCQ and rubric	

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Year 8	**<u>Ugly Doll</u>** **Knowledge & Skills:** Understand where design ideas can come from. To understand how designs communicate ideas. To understand how designs can be improved. To practise different types of sewing stitches. To use a needle and thread to create a soft toy. To evaluate a product.		**<u>Motorised car</u>** **Knowledge & Skills:** Electronics in products. Components and circuit diagrams. Design a battery-operated car driven by motor and wind. Role of cardboard in making products.		**Graphics 2** **Knowledge & Skills:** Why designers communicate ideas. How designers communicate ideas. Develop Free hand design drawing. Develop one- and two-point perspective. Rendering images.	
	Key Learning Outcomes: Pupils will learn to understand where design ideas come from using literacy. Pupils will learn to communicate and improve design ideas. Pupils will learn to use squared paper to design a product to scale. Pupils will learn to make stitches that includes running; back; blanket; French knot; daisy; chain, feather and seed stitches. Pupils will learn to make a small product from a basic pattern informed by their own design. Pupils will learn to evaluate a product constructively so that it could be improved.		**Key Learning Outcomes:** Pupils will learn basic electronic components and circuits. Pupils will learn to use squared paper to design a product to scale. Pupils will learn to manipulate card. Pupils will learn to construct and solder a basic circuit. Pupils will learn to use different materials in combination to realise a final product. **Assessment:** LSQ and or MCQ on electronics & card and rubric on design and make skills.		**Key Learning Outcomes:** Pupils will learn to develop their free hand sketching techniques. Pupils will develop their one- and two-point perspective drawing techniques. Pupils will be introduced to how to render images to create realistic designs. Pupils will develop their shading techniques. **Assessment:** MCQ Graphics communication 2 and rubric	

	Assessment: LSQ and or MCQ on textiles and rubric on design and make skills.					
Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Year 9	**<u>Acrylic Stand</u>** **Knowledge & Skills:** What are plastics and where is it used? Prototyping and the purpose of prototyping. Using card for prototyping. Hand Tools used for plastic cutting . Specialist equipment for forming plastic. Evaluation of a product.		**<u>Metal Casting</u>** **Knowledge & Skills:** Hot working. Metals role in society. Casting. Finishing metals. Using a forge to cast metal.		**<u>Graphics 3</u>** **Knowledge & Skills:** Why designers communicate ideas. How designers communicate ideas. Extend free hand design drawing. Interpreting technical drawing. 3rd Angle orthographic projection.	
	Key Learning Outcomes: Pupils will learn what plastics are, where they come from and types of plastics used. Pupils will learn what prototyping is and why it is used. Pupils will learn how prototyping could lead to design modification before a product is made. Pupils will learn how to cut and form acrylic to realise a product. Pupils will learn how to evaluate a product so that it can be improved. **Assessment:** Rubric on design and make		**Key Learning Outcomes:** Pupils will learn about metals. Pupils will design and make a mould for casting. Pupils will cast using pewter. Pupils will refine a cast to produce a finished product. **Assessment:** MCQ on Metallurgy and rubric on design and make		**Key Learning Outcomes:** Pupils will learn to extend their free hand sketching techniques. Pupils will learn plan view. Pupils will learn to identify 3rd Angle orthographic projection. Pupils will learn how to render images to create realistic designs. **Assessment:** MCQ Graphics communication 3 and rubric	
Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Intent of Study	**NCFE Level 1 Craft Curriculum Progression Map KS4** Learning at key stage four is broken down into projects that use real life design concept scenarios. Each project is scaffolded using assessment criteria given by the examination body, Northern Council for Further Education (NCFE), the assessment criteria is translated into task criteria which shows students what they need to do to achieve the assessment criteria.					
Year 10	**<u>Jewellery making</u>** **Knowledge & Skills:** Understand where metals come from and how they are extracted for use. Develop knowledge and skills needed to manipulate metal. Develop knowledge and skills needed to use non-metals in conjunction with metals. Practise using tools and equipment to produce a range of jewellery ideas. To evaluate a product			**<u>Design Task</u>** **Knowledge & Skills:** Develop graphic skills to design products. Apply pencil sketches to explore ideas for a design. Apply colour to sketches to raise the visual communication of an idea. Apply rendering to sketches to raise the visual communication of an idea. Develop knowledge of technical drawing.		
	Key Learning Outcomes: Pupils will learn where metals come from and the extraction of metal from their ores in the form of reduction with carbon and electrolysis. Pupils will learn to use a range of jeweller specific tools to produce a range of jewellery ideas.			**--Key Learning Outcomes:** Pupils will learn sketch simply ideas Pupils will learn how to apply colour and rendering to produce visually inspiring ideas that communicate effectively. Pupils will learn how to draw in one-, two- and three-point perspective.		

	Pupils will learn to reflect and adapt procedures to improve a jewellery idea. Pupils will learn to apply the use of other materials with metal to form a jewellery idea. Pupils will learn to make a spinner ring and applying alternative finish to the metal surface that isn't a high lustrous finish. Pupils will learn to evaluate processes throughout the unit to improve outcomes. **Assessment:** *NCFE assessment criteria*			Pupils will learn how to draw first angle orthographic images. **Assessment:** NCFE assessment criteria		
Year Group	Term One	Term Two	Term Three	Term Four	Term Five	Term Six
Year 11	**<u>Desk Tidy</u>** **Knowledge & Skills:** Using research to analyses existing products. Designing a product. Using feedback to modify a design. Justifying a design choice. Planning to make a product. Using hand tools to realise a product. Evaluation of a product.			**<u>Employment Opportunities –</u> NCFE Level 2 Only** **Knowledge & Skills:** Understand what enterprise means. Describe a market opportunity within a chosen craft area. Understand what a stake holder is and their role in developing ideas. Identify appropriate financial tools that could be used to support creative enterprising ideas. Identify ways to market a creative product. Understand employment opportunities within a chosen craft area. Rationalise their own strengths and areas for development within a chosen craft area. Understand how to produce an action plan for personal development/career aspirations within craft.		
	Key Learning Outcomes: Pupils will learn about existing products and use this information to identify strengths and weaknesses. Pupils will learn to apply their understanding of products to design improved products. Pupils will learn to respond to feedback to improve a design that better suits a client. Pupils will learn to rationalise and justify choices within a design. Pupils will learn to plan the making process of a product. Pupils will apply making skills to produce a product. Pupils will learn to evaluate a product to explain weaknesses and strengths which is applied to a redesign of the product. **Assessment:** NCFE assessment criteria.			**Key Learning Outcomes:** Pupils will learn what enterprise is and identify examples of enterprise in the world around us today that relates to craft. Pupils will research the market to show what craft enterprise is currently in fashion. Pupils will learn that stake holders play an important role in developing ideas and how financial planning is crucial to a successful venture. Pupils will learn how crafts are marketed in the modern world Pupils will explore and identify employment opportunities within a chosen craft area. Pupils will analyse their strengths and areas for development so that they can produce an action plan that support progression through the craft industry. **Assessment:** NCFE assessment criteria.		