Year 7 Design and Technology - Inspire

During year 7 pupils will study the 3 specialist areas below throughout the year. Pupils will study Product Design for an hour a week throughout the duration of the year. Pupils will also spend another hour a week for approximately 18 weeks of the year in Food and Nutrition and approximately 18 weeks in Textiles. Each area studied will allow for incremental challenge and progression. Pupils will be taught to design, make, evaluate and along with acquiring technical knowledge in line with the National Curriculum.

Product Design	Food and Nutrition	Textiles
Acquire knowledge to identify and analyse problems to create solutions. Introduction to designing and turning 2D into 3D. Using 2D and 3D computer aided design. Exploration of other cultures and festivals from around the world to understand user needs. Acquire Health and Safety understanding. Identifying basic workshop tools and equipment. Shaping and forming materials using hand tools to help join and finish timber and electronic products. Acquiring skill to create paper templates to help with accuracy. Introduce and demonstrate computer aided manufacturing. Evaluate ideas against a specification. Investigating the work of past/present designers. Sources and origins of materials: timber. Understanding structural forces used in everyday construction. Acquire knowledge of electronics lighting systems.	Acquire and demonstrate principles of food hygiene and safety. Develop knowledge and understanding of ingredients and healthy eating. Acquire knowledge of food provenance. Acquire food preparation and cooking skills. Bridge and claw knife skills. Apply knowledge to make informed food choices. Develop creative and practical expertise to perform everyday tasks confidently. Introducing food science with enzymic browning. Develop and apply repertoire of knowledge, understanding and skills to create high quality dishes for a range of people. Evaluate and test their food creations.	Introduction to the nature of staple and filament fibres. Categorise fibres based on their source: Natural and man-made fibres. Consideration of the social, moral, and environmental factors influencing fabric choice, including sustainability. Identification of the working properties of fibres and using this knowledge to identify fabrics that are fit for purpose. Define the process of fibre to fabric. Identification and sampling of a range of fabric constructions- weaving, knitting, and bonding. Detailed testing and evaluating of fabric construction sampling. Introduction to practical hand sewing. Learn the health and safety basics of using a sewing machine and equipment use. Acquire technical knowledge of successfully threading up and operating the sewing machine.

Year 8 Design and Technology - Innovate

During year 8 pupils will study the 3 specialist areas below throughout the year. Pupils will study Product Design for an hour a week throughout the duration of the year. Pupils will also spend another hour a week for approximately 18 weeks of the year in Food and Nutrition and approximately 18 weeks in Textiles. Each area studied will allow for incremental challenge and progression. Pupils will be taught to design, make, evaluate and along with acquiring technical knowledge in line with the National Curriculum.

Product Design	Food and Nutrition	Textiles
Further develop knowledge to identify, understand and analyse problems to create solutions with the help of product analysis. Further developing 2D and 3D drawings and shading techniques. Build on 2D and 3D computer aided design to develop product accuracy. Develop specifications to inform the design of innovative, functional, appealing products that respond to needs. Understanding form vs functionality and aesthetics to aid creative & purposeful designing. Further develop and demonstrate Health and Safety. Identifying a range of workshop tools and equipment. Shaping and forming materials using a variety of hand tools and machinery to help join and finish timber, polymer, and electronic products. Developing skills of prototyping with simple materials and components to help with user centred design. Further build understanding of computer aided manufacturing using laser cutter. Test and evaluate ideas against a specification. Understand developments in design and technology, its impact on individuals, society, and the environment. Sources and origins of materials: polymers. Identifying and understanding different types of mechanisms. Further develop knowledge of electronics lighting systems.	Further develop and demonstrate principles of food hygiene and safety. Develop their knowledge and understanding of food and nutrition. Develop an understanding of food provenance. Develop food preparation and cooking skills. Bridge, claw, dice and slicing knife skills. Deepen and apply knowledge of food choices. Develop the creative, technical, and practical expertise with starch-based ingredients. Developing food science with dextrinization and gelatinisation. Build and apply repertoire of knowledge, understanding and skills to create high quality dishes for a range of people. Evaluate and test their food creations and the work of others.	Acquire knowledge of colour application technique including printing and dyeing techniques. Develop a variety of techniques and skills to print, dye, embellish and decorate the finished product. Test and evaluate a range of colour application techniques through sampling. Consider social, moral and environmental impacts when researching and designing for other cultures. Develop a repeat pattens focusing on tessellation. Opportunity to develop skills using CAD/CAM. Design and manufacture a product from a given design brief. Develop specifications to inform the design and application of surface decoration that respond to a design brief. Developing a product from a template. Apply technical knowledge and understanding of textile working properties/classification when selecting and applying surface decoration. Learn how to construct a technical product including rolled hems, overlocking edges, envelope folding. Further develop and demonstrate health and safety when using the sewing machine and equipment. Continue to build upon sewing machine skills. Acquire knowledge of the importance of seam allowance and reverse stitch. Final product testing and evaluating against initial specification.

Year 9 Design and Technology - Integrate

During year 9 pupils will study the 3 specialist areas below throughout the year. Pupils will study Product Design for an hour a week throughout the duration of the year. Pupils will also spend another hour a week for approximately 18 weeks of the year in Food and Nutrition and approximately 18 weeks in Textiles. Each area studied will allow for incremental challenge and progression. Pupils will be taught to design, make, evaluate and along with acquiring technical knowledge in line with the National Curriculum.

Product Design	Food and Nutrition	Textiles
Embed knowledge to identify, analyse and reformulate solutions for users and target markets. Use appropriate designing techniques to showcase products in 2D and 3D. Embed 2D and 3D computer aided design to develop a product with dimensional precision. Understanding ergonomics and anthropometrics to aid designing for human comfort. Understanding colour theory, branding and hidden meanings in graphical logos. Embed knowledge and understanding of Health and Safety. Extend knowledge of workshop tools and equipment. Shaping and forming materials with selected hand tools and machinery with focus on precision and accuracy to help join and finish products. Extending skills of scaled prototyping with more complex materials and component based on work of past designers. Deepen understanding of computer aided manufacturing using laser cutter and 3D printer. Test, evaluate and refine ideas against a specification with recommendation for improvement. Sources and origins of materials: paper and card. Investigate New and emerging technology.	Embed knowledge and understanding of food hygiene and safety. Extend knowledge and understanding of food, nutrition and health. Extend knowledge on food provenance. Extend food preparation and cooking skills. Bridge, claw, dice, slicing and filleting knife skills. Extend knowledge of food choices. Cooking a variety of dishes and taking dietary needs in to consideration using high risk foods. Investigating and embedding food science including coagulation, denaturation and aeration. Embed skills to create high quality dishes for a range of people applying their knowledge and understanding of food and nutrition. Evaluate and test their food creations and that of others and make recommendations for improvements.	Research into fast fashion and issues related to sustainability. Understanding key components of a life cycle analysis of a product. Linking knowledge of fibre sources/classification to impacts on the environment and the 6R's. Deepen and embed knowledge of social, moral and environmental factors to consider when making design decisions. Develop a range of fashion communication techniques including taking inspiration from the world around us, collaging and fashion illustration. Embed knowledge of fabric construction through creating woven fabric from waste textiles. Deepen 3D construction techniques using interfacing, fabric lining, zip insertion. Creating pattern templates. Pinning and accurate cutting of fabric. Developing skills to produce high quality products. Evaluate throughout production through quality control checks. Embed knowledge and understanding of health and safety when using textiles machinery and equipment- use of heat press. Extend sewing machine skills further. Understand how to insert a zip and use a zipper foot. Final product testing and evaluation.

KS4 Design and Technology - Illuminate

YEAR 10

Exam based theory and practice - Design and Technology in the 21st Century
Core knowledge must cover the following: •understanding design and technology practice, •understanding user needs, •writing a design brief and specifications, •investigating challenges, •developing ideas, •investigating the work of others, •using design strategies, •communicating ideas, •developing a prototype, •making decisions

AUT1	AUT2	SPR1	SPR2	SUM1&2
Unit 3 Papers and board Timbers Metals Polymers Textiles UNIT TEST	Unit 5B Timber, Paper, Textiles based materials sources, origins and properties. Working with specialist materials Commercial manufacturing, surface treatments and finishes UNIT TEST	Unit 1 Industry and enterprise Sustainability and the environment People culture and society Production techniques and systems Informing design decisions UNIT TEST	Unit 2 Energy Generation Energy storage Modern materials Composite materials System approach to designing. Electronic systems processing Mechanical devices UNIT TEST	Unit 4 Forces and stresses Improving functionality Ecological and social footprint The 6Rs Scale of Production UNIT TEST
Timber, Paper, Textiles based practical Wood joints – butt, comb, housing, dowel and adhesives Isometric drawing and rendering skills Use of workshop hand tools and machinery		Use of designer influence CAD/CAM – 2D design and laser cutter, tinker Cad and 3D Printer. Orthographic Projection and designing skills Use of vacuum former, strip heater and vinyl cutting		NEA preparation tasks. Investigation and research Developing design and rendering skills

YEAR 11

NEA work - Design and make task. (Approximately 35 hours) Choice of specialising in **one** of the following areas: a) Papers & boards b) Natural & manufactured timber c) Fibres & textiles.
Powerful knowledge must include: •selecting and working with materials and components •marking out •using tools and equipment •using specialist techniques •using surface treatments and finishes

Unit 6	NEA FOCUS	Unit 7	NEA FOCUS	GCSE EXAM FOCUS
Investigating, primary and secondary data The work of other designers The work of other companies Design strategies Communication of design idea UNIT TEST	Identifying and investigating design possibilities Developing a design brief and specification Generating and developing design ideas	Selection of materials and components Tolerances Material management Tools, equipment, techniques and finishes Surface treatments and finishes UNIT TEST	Manufacturing a prototype Analysing and evaluating design decisions and prototype	Key terminology retrieval Past paper practice

Year 10 Design and Technology - Illuminate

Resistant Materials	Graphic Products	Textiles
Designer investigation/research. Creating design ideas from research, embedding rendering skills. Taking inspiration from existing product research. Understanding how to identify a need/gap in the market. Develop an understanding of wood joints in commercial products. Timber selection informed by knowledge of working properties and calculating quantities and costs based on best use of materials. Understand how to mark out and measure timber products. Use and further develop a wide range of timber joining methods including adhesives, screws and knock down fittings. Develop cutting, shaping, and finishing skills to timbers and polymers. Use CAD/CAM to develop accurate deigns for laser cutting. Apply knowledge of timber working properties to make informed choices when selecting and working with products. Design and manufacture a technical resistant material product focusing on functionality, user centred design, application of knowledge of ergonomics and anthropometrics when designing. Exploration and application of a range of electronic components and systems. Production of a technical working drawing.	Designer investigation/research. Creating design ideas from research, embedding rendering skills. Taking inspiration from existing product research. Understanding how to identify a need/gap in the market. Develop an understanding of graphics, colours and brandings in commercial products. Paper and card selection informed by knowledge of working properties and calculating quantities and costs based on best use of materials. Understand how to mark and layout graphic products. Use and further develop a wide range of graphic joining methods including die cutting, alignment and printing. Develop cutting, shaping, and finishing skills to cards, papers and polymers. Use CAD/CAM to develop accurate deigns for laser cutting and the 3D printer. Apply knowledge of card and paper working properties to make informed choices when selecting and working with products. Design and manufacture a technical graphic product focusing on functionality, user centred design, application of knowledge of ergonomics and anthropometrics when designing. Exploration and application of a range of industrial graphical processes. Production of a technical working drawing	Designer investigation/research. Creating design ideas/fashion illustrations from research, embedding rendering skills. Taking inspiration from existing product research. Understanding how to identify a need/gap in the market. Develop an understanding of sewing paper patterns and commercial pattern markings and their meanings. Fabric selection informed by knowledge of working properties and calculating quantities and costs based on best use of materials. Understand how to measure and cut fabric using a lay plan. Use and further develop a wide range of garment construction methods including zip insertion, bias binding, darts, applying facings, overlocked edges and more. Develop quilting, weaving, felting skills further and apply to textile garments/products. Mixed media exploration, further development of more complex colour application/surface decoration techniques. Extend knowledge on how to create a unique pattern. Use CAD/CAM to develop this into a stencil for screen printing. Adapt/create a unique pattern from a pattern block/template. Apply knowledge of fabric working properties to make informed choices when selecting and working with a wide range of fabrics. Design and manufacture a technical textile product focusing on functionality, user centred design, application of knowledge of ergonomics and anthropometrics when designing. Exploration and application of a range of components/fastenings. Production of a technical working drawing.