Subject :	A level Product Design	Year Group:	12
	September to December		
Scheme title	**AO4: Demonstrate and apply knowledge and understanding of:** **Technical Principles** **Designing And Making Principles.**	**SOW being updated**	**SOW being updated**
Purpose of scheme	A creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in numerous careers. Especially those in the **creative industries**. Pupils will investigate **historical, social, cultural, environmental and economic influences** on design and technology, whilst enjoying opportunities to **put their learning in to practice by producing prototypes** of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers	**SOW being updated**	**SOW being updated**
Knowledge in sequence	Product Design requires students to engage in both practical and theoretical study. This specification requires students to cover design and technology skills and knowledge. Students should develop the ability to draw on and apply a range of skills and knowledge from other subject areas to inform their decisions in design and the application or development of technology. There are clear links between aspects of the specification content and other subject areas such as; Computer Science (section 3.1.6), 'The use of computer systems' and section (3.1.7) 'Digital design and manufacture'; Business Studies (section 3.1.13) 'Enterprise and marketing in the development of products; Art and Design (section 3.1.14) 'Design communication') History (section 3.2.2) 'Design Theory').	**SOW being updated**	**SOW being updated**
Skills	Students are encouraged to: Be open to taking design risks, showing innovation and enterprise whilst considering their role as responsible designers. Develop intellectual curiosity about the design and manufacture of products and systems, and their impact on daily life and the wider world. Work collaboratively to develop and refine their ideas, responding to feedback from users, peers and expert practitioners. Gain an insight into the creative, engineering and/or manufacturing industries. Develop the capacity to think creatively, innovatively and critically through focused research and the exploration of design opportunities arising from the needs, wants and values of users and clients . Develop knowledge and experience of real world contexts for design and technological activity. Develop an in-depth knowledge and understanding of materials, components and processes associated with the creation of products that can be tested and evaluated in use. Be able to make informed design decisions through an in-depth understanding of the management and development of taking a design through to a prototype/product. Be able to create and analyse a design concept and use a range of skills and knowledge from other subject areas, including maths and science, to inform decisions in design and the application or development of technology. Be able to work safely and skilfully to produce high-quality prototypes/products. Have a critical understanding of the wider influences on design and technology, including cultural, economic, environmental, historical and social factors. Develop the ability to draw on and apply a range of skills and knowledge from other subject areas, including the use of maths and science for analysis and informing decisions in design.	**SOW being updated**	**SOW being updated**
Key Words	Ferrous Metals Those Metals Contain IRON (Fe). Non-ferrous Metals Metals which do not contain IRON Alloys A mixture. of two or more metals. Thermoplastics Can be remoulded numerous times with the application of heat. Thermoset Plastics Polymers which cannot be remoulded once set in shape. Ceramics Products made from clay and similar inorganic materials (sand), products such as pottery, brick, cement or glass. Composites A material made from two or more different materials that, when combined, are stronger than those individual materials by themselves. Smart Material Materials which have properties that can be significantly changed in a controlled fashion by external stimuli, such as heat, moisture, electric or magnetic fields, light. New / Modern Materials A modern material is a material that has been engineered to have improved properties Malleability Is capable of being extended or shaped by beating with a hammer or by the pressure of rollers. Ductility The ability of a material to be drawn out into wire or thread without losing strength or breaking. Conductivity Measure of a material's ability to conduct an electric current. Resistivity A measure of the resisting power of a specified material to the flow of an electric current. Hardness The measure of the resistance of a material to surface indentation, abrasion, or scratching. Machinability A characteristic of a metal that makes it easy to drill, shape, cut, grind, etc. Corrosion Resistance	**SOW being updated**	**SOW being updated**
	How well a metal can withstand damage caused by oxidization or other chemical reactions. Elasticity The ability of a metal to resume its normal shape after being stretched or compressed. Plasticity Is the ability of a metal to undergo permanent deformation, a non-reversible change of shape. Tensile A rope is in "tension" as it is pulled apart. This stretching puts the rope in tension. Compression This is a squashing / squeezing force where a body is pushed against itself. Impact The action of one object coming forcibly / hitting into another object. Destructive Testing Carried to find properties and behaviour of materials under different loads and conditions. The material is damaged during the test. Non-Destructive Testing (NDT) A testing technique used by engineers to evaluate the properties of a material or product without causing damage to the original product Standard Stock Shapes Most materials are produced in standard sizes enabling them to be easily used across industries. Knowing what shapes and sizes are available makes designing, buying and tooling easier. HARDWOOD The wood from a broadleaved, slow growing tree. SOFTWOOD The wood from a conifer tree. PAPER A material manufactured in thin sheets from the pulp of wood. ORTHOGRAPHIC A type of engineering drawing with 3 different views. Plan, Front & Side FABRICATE The process of making something by joining pieces together. JIG A type of custom-made tool used to control the location and/or motion of parts or other tools. ISOMETRIC A type of 3D drawing of a product.		
	TOLERANCE An allowable amount of variation of the dimension of a part / product. + / - EXPLODED A type of drawing showing how the parts of a product fit together. It looks like the product has been blown up.		
End Point		**SOW being updated**	**SOW being updated**
Assessment method	School Set assessments Week 17, 32, 50 & 57 (mock examinations) Department (interim) assessments Week 8, 24, 43. These utilise past paper questions and assess all knowledge covered up to that point in time. A-Level Coursework is marked regularly (/ 3 weeks).	**SOW being updated**	**SOW being updated**