Design and Technology

Curriculum Intent	Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage independently when designing and making. Pupils will: Design - using research and exploration to identify and solve their own design problems, inspiring pupils to think creatively to generate original ideas, develop them and finalise them, communicate their ideas clearly and also work in partnership with others. Knowledge – understand the theory behind materials, processes, techniques to develop skills further. Make - be able to understand how to select tools and build the skills to work maturely and independently. Evaluate - test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups and have the written skills to do this. Students will build their skills in the workshop and ability to select and properly use an expanding range of tools as they progress through the years and gain independence. Students will expand their knowledge of the design world and the design process as they use their knowledge to generate ideas and evaluate them while building core skills that will be of value in the future.

Year 7	Year 8	Year 9	Year 10	Year 11
T1&2: Dice project All students will have a introduction to health and safety in the workshop. Students will develop core knowledge about wood, metal and polymers whilst also understanding finishing techniques for each material. Develop safety skills with basic tools such as marking gauge, try square and steel rule for marking out and using the pillar drill very accurately to create a wooden dice that they can take away to use at home. **T3&4: 3D Cardboard Letter** All students will have a working knowledge of Components and soldering, Typography, papers and	**T1&2: Puzzle frame** All students will have a working knowledge of four different joints whilst developing skills planning and making a Lap joint box frame for a puzzle game inspired by London. Students will be able to use and select relevant tools and use them properly and safely such as the Tenon saw and files. Students will be introduced to 2D design to develop an etched or printed on paper design so students can cut out there design more accurately **T3&4: Movement & mechanisms** All students will have a working	**T1&2: Art/Design Keyring** All students will develop a working knowledge of art/design movements and their characteristics. be able to develop research to inspire design ideas and then recreate as a Keyring. They will take a more in depth look finishing techniques and explore relevant packaging ideas and selection of different types of wood finishes (stains and varnish). They will take home a keyring with a suitable packaging they have designed. **T3&4: Joinery – Storage box** All students will have further working knowledge of softwoods, hardwoods and manufactured boards, be able to	**T1: Architecture** A combination of environment & ecological subject units through an architectural design task. Students are to gain an understanding of architectural modernism and create their own modernist work from foam board. These sessions will also link to environmental issues, including the impact of new products on the environment, sustainability and resource consumption. They will also cover ecological issues from deforestation to carbon footprint, the 'Six R's' and pollution from manufacture. **T2: Forces and Motion** Students are to gain theoretical and practical knowledge of Forces & stresses - including compression, torsion and tension, sheer force and bending	**T1&2: Controlled Assessment - NEA** Covered this term are: Design Briefs and Specification, Development of ideas in response to a brief, the creation of initial ideas, developing ideas, model making, CAD, final design and creating a cutting list. Students will then build a prototype of their final designs to a high standard, working independently with a range of different materials before evaluating their product. Students will submit their work

boards, be able to use and select cardboard and understand how to form it into 3D shapes using scissors, craft knives and different adhesives. They will take away a cardboard letter of their own design with simple electronics inside. (may include 2D design to plot template for letter shape) **T5&6 MDF Plane** All students will have a working knowledge of the flight/aviation, be introduced to different hand tools, and be able to use the pillar drill independently and the belt sander safely. They will take away an MDF plane that they can use at home.	knowledge of the different forms of movement: levers, CAMS and followers including understanding lever classes and examples, Fulcrum and marking out a basic frame for an Automaton toy. Activities will occur to help students understand the different movements ready for designing and making next term. **T5&6 Automaton project** All Students are to gain practical knowledge of Forces & stresses - including compression, torsion and tension, sheer force and bending moments, as well as an understanding of dynamic and static loads. This knowledge will be reinforced through a range of practical activities / challenges and team work.	use and select saws and understand how to use a belt sander and know how to create four different joints and when best to use them. They will take a more in depth look at the properties and selection of different types of wood and finishes (stains and varnish). They will take home a wooden box to store small items in. **T5&6 Innovation through iterative Design** Students are to gain practical knowledge of iterative design from brief to developing prototypes via a project created by the design museum regarding sustainable lighting in third world countries. This knowledge will be reinforced through a range of practical activities / challenges, peer assessment and team work.	moments, as well as an understanding of dynamic and static loads. This knowledge will be reinforced through Chair design project. **T3: Materials** This unit aims to actively engage students in the learning of different material types and applications by delivering it through a creative project, leading to a usable product that also assists in the revision of information. Creativity, organisation and graphic design skills will be stretched as students create a function board game. **T4: Textiles** An introduction to textiles, looking at synthetic and natural fibres, their uses, applications and properties. Students will learn basic sewing techniques and fabric printing and be introduced to a range of different designers. **T5: Electronics** Students are to complete a quick course in electronics. This unit will cover Systems approach to designing, students will learn about the function of inputs, systems and outputs and how to draw circuits and also learn how to solder and put together a basic circuit (a night light). There will be a small amount of 2D design work focused on cutting out finger joints on the laser cutter. **T6: Controlled Assessment** Students will start their coursework with Research and Task Analysis after June 1st 2023	as an online document, recording their own research, ideas, development, practical work and evaluation. The NEA element of the course is worth 50% of the final mark for their GCSE. **T3,4&5: Completion off Section E and F of NEA (February deadline)** **Revision of Previous Projects** Content will be based on analysis of exam results. Students will revisit various past projects, refreshing their knowledge before the final summer exam worth 50% of the final mark for their GCSE.