Design & Technology

	Please note: Year 7 classes are taught in rotation and across Autumn term will explore the following topics below alongside 'jigsaw' work.		
Year 7	**Introduction to Graphics**	**Clay Planters – introduction to ceramics**	**Wooden Block Heads – introduction to woodworking skills**
	Key Knowledge explored : What is technical drawing ? How is it used in DT ? Introduction to drawing skills, including one point & two point perspective drawings. Developing greater awareness of use of 'Graphics within the Environment' and how it impacts interest and usage in business. **Skills developed :** This project helps students to understand how to successfully create and use isometric drawings and orthographic drawings Shading, tones, depth **Linking Learning :** This project forms the building blocks upon which all perspective, isometric and orthographic drawing will be built Further development Yr 9 development of perspective & isometric drawings, additional focus on orthographic sketches	**Key Knowledge explored :** How can clay be used to make a plant pot ? How are pots made differently ? Introduction to safety in workroom and the use of modelling mediums Develop a greater awareness of the different types and styles of plant pots, focus on the style of one designer **Skills developed :** This project will help students to develop their investigative and research skills focusing on pot designs and designers Practical modelling will include coil / slab / pinch pots **Linking Learning :** This project is the initial introduction to the use of ceramics & its associated tools which they will have the opportunity to return to later in Key Stage 3 & 4	**Key Knowledge explored :** How can I use tools safely ? Introduction to wood working tools including Health & Safety in the workroom environment Further development of perspective & isometric drawing linked to wooden designs **Skills developed :** In this project students will be introduced to wood working tools (tenon saw, hand drill & pillar drill) They will be encouraged to consider aesthetics in their designs **Linking Learning :** This will be the introduction to wood working hand tool skills which they will develop over the Key Stage and progress on to power tools skills
Assessment	The first assessment will be an 'End of Project' self & peer written evaluation which will reflect on their planning, drawing and reviewing skills	Pre-practical risk assessment based upon ceramics & carving tools in workroom environment 'End of Project' self & peer written evaluation reviewing both practical & planning skills	Pre-practical risk assessment hand tools (tenon saw, hand drill & pillar drill, sanding block) 'End of Project' self & peer written evaluation reviewing both practical & planning skills

Design & Technology

	Autumn	Spring	Summer
Year 8	**Balloon Powered Vehicles**	**Slot Together Animals**	**Tin Can Lamp – introduction to electronics**
	Key Knowledge explored : How is motion created ? How can model design effect efficiency ? Introduction to movement through designs of vehicles, exploration of simple mechanics of motion, looking into the designs of simple movement (axles, wheels) **Skills developed :** This project helps students to understand the design necessities to produce movement of a toy such as gears & pulleys, includes further development of hand tools for wood, and the introduction of surface-mounted power tools **Linking Learning :** This project builds upon prior wood working skills taught as well as design drawings; it also introduces the use of power tools which will be regularly used in Key Stage 4 It starts students considering key concepts such as aesthetics, clients' needs, functionality, and anthropometrics	**Key Knowledge explored :** How do models stay standing ? What angles of contact are needed at slot joints ? Development of understanding of key features of plywood and its uses, how animal features can be depicted & outlined in design, an awareness of the needs of the customer **Skills developed :** This project enables students to develop their use of hand and power tools, further their drawing & research skills and be introduced to the use of slot joints to create structure. Students will be encouraged to include elements of finishing (varnish, wax, oils, engraving, etc) **Linking Learning :** This project helps to secure understanding of the health & safety necessities of hand and power tools. In addition, it focuses on the aesthetic & mechanical element of the design, as well as the characteristics of plywood	**Key Knowledge explored :** How do electrical circuits work ? How can direction of light be altered to suit purpose ? Develop an understanding of the components involved in a circuit and their order within the circuit. Look at 'designs' versus 'function' **Skills developed :** This project introduces simple electronics requiring the use of soldering several components, combined with wood working skills with hand, power and battery tools as well as finishing techniques **Linking Learning :** Prior knowledge of hand and power tools are built upon and the use of rechargeable power tools (screwdriver, drill) is introduced in preparation for Key Stage 4
Assessment	Pre-practical risk assessment hand tools (tenon saw, scroll saw hand drill & pillar drill, belt & disc sanders) 'End of Project' self & peer written evaluation reviewing both practical & planning skills	Pre-practical risk assessment hand tools (tenon saw, scroll saw hand drill & pillar drill, belt & disc sanders) 'End of Project' self & peer written evaluation reviewing planning, practical and finishing skills	Pre-practical risk assessment (power tools & work room safety, electricity) 'End of Project' self & peer written evaluation reviewing planning, practical and finishing skills

Design & Technology

Year 9	**Bug Hotels**	**Recycled Polymer Key Rings / Jewellery**	**Logos & Packaging – textiles & screen printing**
	Key Knowledge explored : What do bugs need ? How can we provide it environmentally ? A project on how we can create bug hotels using recycled materials, primarily wood; ensuring there are a variety of areas provided from different sources or skills, focusing on a range of wood joints **Skills developed :** This project pulls together previous wood working skills taught and refines them to produce recognisable joints (butt, lap, mitre) with countersunk screws or panel pins All designs will require 'finishing' using oils, waxes, paints, or varnishes to enable bug hotels to suit their function **Linking Learning :** Perspective & isometric drawings and 3D Sketch Up will support the design and planning, taught previously. The introduction of formal joint teaching ensures key knowledge is carried into Key Stage 4 where it can be built upon	**Key Knowledge explored :** How can recycled materials be made into marketable items and who does it ? This project focuses on the use of recycled plastics & polymers, which companies / individuals currently make living from this and how do they do this, how can we do the same in a school environment and make key rings or items of jewellery **Skills developed :** This project introduces the concept of remoulding/reshaping an existing product into another, changing waste plastic into polymorphing polymers. An introduction to moulding using resins. It is based upon designing and producing a design using saws, sanders and drills. **Linking Learning :** Planning jewellery through design sketches using isometric and perspective sketches from previous terms and introducing polymorphing & resins which will lead into Key Stage 4 projects	**Key Knowledge explored :** Why do packages have different fonts ? Why are different items packaged differently ? Why did a company use that logo ? A look into the world of packaging focusing on design shape & size, font used on the package. Developing into company logos and emblem designs in terms of ethics, politics, advertising **Skills developed :** This project starts with perspective & isometric drawing and progresses through to 3D designs on computers. It looks into the use of logos and emblems to represent companies/artists which students will replicate or mimic using photoshop to produce transfers for the fabric press **Linking Learning :** Perspective & isometric drawings skills will be built upon from previous years and will be developed further using CAD (3D Sketch Up) in preparation for Key Stage 4. The introduction of screen printing & textiles provides knowledge on which GCSE students can later build.
Assessment	Pre-practical risk assessment (hand & power	Pre-practical risk assessment (sandwich heat	Pre-practical risk assessment (dyes, inks, fabric

	tools, work room safety) 'End of Project' self & peer written evaluation reviewing planning, designing and practical skills	press, resins) 'End of Project' self & peer written evaluation reviewing planning, designing and practical skills	press, work room safety) 'End of Project' self & peer written evaluation reviewing planning, designing and practical skills
	Autumn	**Spring**	**Summer**
Year 10 Practical	**Kitchen Utensils – overcoming disability**	**Sweet Dispensers**	**Polymer Thermo-forming**
	Key Knowledge explored : What is a mood board ? How do I overcome a disability ? By providing students with a challenge, they have to plan how they will overcome it, pulling upon own experiences as well as those of others. They need to be aware of the needs of an individual and what issues their specific disability experiences in the kitchen **Skills developed:** This project introduces students to the layout of coursework using The Iterative Design Process; mood board, annotations, design brief, research, sketches & initial planning, reviewing & adapting designs, prototyping, evaluating & reviewing). It involves modelling, making, and changing designs to make improvements **Linking Learning :** This project builds upon practical (wood working skills) and drawing (isometric,	**Key Knowledge explored :** How do sweets come out of the machines ? How do designs differ and why ? Looking at current designs of sweet dispensers, reviewing styles/sizes/mechanics of dispense. Follow iterative design process to plan, design, sketch, assess and review, make prototype and model to make own dispenser to accomplish task **Skills developed :** This project builds upon prior coursework knowledge, refining skills in design, research and evaluation Practical skills in wood working and polymer moulding will be developed further to produce a working design **Linking Learning :** This project builds upon practical (wood working and plastic moulding & shaping skills) and drawing (isometric, perspective, orthographic) skills taught in Key Stage 3.	**Key Knowledge explored :** Understand the use of polymorphing to make & design a keyring, focusing on purpose & function **Skills developed :** In this project students will design & morph plastics, finish keyrings using cutters & sanders They will be encouraged to consider aesthetics in their designs. **Linking Learning :** This will continue from Yr 9 recycling plastics project and provide additional experience for Yr 11. **Jigsaw Making – laser cutting** **Key Knowledge explored :** Why are jigsaw pieces the same or different ? Investigation into aesthetics, purpose, anthropometrics, materials and clients' needs. **Skills developed :** Introduction to laser cutting and computer design (CAD). Understanding of the materials

Design & Technology

	perspective, orthographic) skills taught in Key Stage 3. The Iterative Design process has been introduced in preparation for Year 11 practical NEA.	The Iterative Design process has been introduced in preparation for Year 11 practical NEA.	used in jigsaws **Linking Learning :** This project allows students to learn about laser cutting for Yr 11 NEA coursework
Assessment	Practical assessment marked against the Year 11 NEA criteria. Students perform a Self-Review and a Peer Review.	Practical assessment marked against the Year 11 NEA criteria. Students perform a Self-Review and a Peer Review.	Practical assessment marked against the Year 11 NEA criteria. Students perform a Self-Review and a Peer Review.
	Autumn	**Spring**	**Summer**
Year 10 Theory	**Paper, Card, Board** **Wood, Timber**	**Polymers & Plastics** **Fabrics & Textiles**	**Metals & Alloys** **Smart & Emerging Technologies**
	Key Knowledge explored : How is it made ? What happens to it ? Introduction to processes of making paper, finishing and sizing of paper, environmental impact Investigation into paper types and differences in uses, texture, grams per sq metre Understanding of how wood types differ and what impact this has upon their use in manufacturing **Skills developed :** This topic helps students to understand how to paper is created from timber, the various finishes, sizes, and thicknesses, Practical investigation into making hand-made paper	**Key Knowledge explored :** What are plastics made from ? Why can some be recycled when others cannot ? Develop a greater awareness of the different sources of the raw materials of plastics and their impact on the environment Understanding of how different textiles are made to suit their purpose and an awareness of new technology fabrics (thermos & photo sensitive) **Skills developed :** This topic will help students to look at the sources of plastic and will encourage them to develop greater understanding of the processes of recycling plastics Focus on the structure and source materials of different textiles linking to their uses in society. Practical tasks will include thermo—forming of	**Key Knowledge explored :** How are some metals metallic when others are not ? What is a smart technology ? Introduction to metals, non-metals, and alloys. Where do they come from, what makes them different from each other and how are different metals used in manufacturing. **Skills developed :** In this topic students will be introduced to metals used in industry and manufacture. They will research sources, properties and characteristics which influence their uses **Linking Learning :** This will be the introduction to metals & alloys topic which is only covered in Key Stage 4 for

Design & Technology

	Linking Learning : This topic forms the building blocks upon which the topics of paper, card, wood and timber are built upon and is needed for Section B of GCSE paper It will be revisited in Year 11as a topic for revision focus	plastics and the weaving & sewing of textiles **Linking Learning :** This topic will build upon textiles which were previously used in Key Stage 3 but ill focus more upon their sources and structure. Plastics & polymers were previously used in Year 9 Recycling Plastics project where keyrings were made from recycled plastics	the GCSE
Assessment	End of topic assessment using short answer exam questions and multiple-choice questions.	End of topic assessment using short answer exam questions and multiple-choice questions.	Year 10 mock exam (AQA GCSE Nov paper from previous year)
	Autumn	**Spring**	**Summer**
Year 11	**Non Examination Assessment Preparation, Planning & Completion**	**Revision**	**Revision**
	Key Knowledge explored : Format of coursework from previous examples and exam board guidance, discussion of client & product requirements, focus on material research, practical design through stages from working prototype to final design, review of NEA following Iterative Design process and completion of NEA written sections. **Skills developed :** Focus on mechanical devices, prototype development, selection of materials and components, tolerances, material management, Training & safety of specialist tools and equipment	**Key Knowledge explored :** Forces and stresses, new and emerging technologies, energy generation and storage, developments in new materials, investigation, primary and secondary data, environmental, social and economic challenge, **Skills developed :** Practice exam questions during lesson time, end of unit tests and Spring mock paper. Students will consolidate their knowledge from KS 3 and KS 4 to comprehensively answer questions based on paper, board & card, timbers & wood, Metals & Alloys, Plastics & Polymers, New & Emerging Technologies, Forces & stresses.	**Key Knowledge explored :** Students will use their audited RAG rated exam feedback highlighting areas of development required to secure understanding. Examples of examination questions will be issued to students specifically looking at how questions are worded and the mark scheme. **Skills developed:** Students will consolidate their knowledge from KS 3 and KS 4 to comprehensively answer questions based on paper, board & card, timbers & wood, Metals & Alloys, Plastics & Polymers, New & Emerging Technologies, Forces & stresses.

Design & Technology

	Linking Learning : Draws upon all previous knowledge from Key Stages 3 & 4. They will have mastered their ability to independently write their research methods, hypothesis setting, plan of action, writing up an experiment, analysis results of experiment and drawing conclusions, refencing sources. Students will be familiar to the marking scheme.	**Linking Learning:** Students will use both the practical and theoretical skills learnt in KS 3 and KS 4. They will continue to develop and extend their understanding and knowledge of all aspects of the course. Students will understand how to securely write their brief, ensuring they apply the mark scheme to their assessment	**Linking Learning:** Students will use both the practical and theoretical skills learnt in KS 3 and KS 4. They will continue to develop and extend their understanding and knowledge of all aspects of the course. Students will understand how to securely write their brief, ensuring they apply the mark scheme to their assessment.
Assessment	Informal initial review of design for improvements prior to practical making of NEA design. Mock exam paper in November (previous June GCSE paper)	NEA pre-deadline practical marking. Review and marking of final NEA piece.	NEA deadline marking for GCSE coursework grade. Mock exam paper (previous Nov paper)