Curriculum: Design Technology

Year 7 Curriculum

Term 1	Term 2	Term 3
Pixar Pugglies **Technical knowledge:** Understanding the sources of synthetic, natural and technical fibres. Properties of various fibre types and their uses. Calculating surface area. The work of present designers such as Pixar. New and emerging technology in sports textiles. **Skills:** Designing, rendering and annotating. Template making Sewing Cutting fabric.	**Lever project** **Technical Knowledge:** Understanding the sources of hardwoods and softwoods. Properties of various woods and their uses. Identifying classes of levers. Mechanical advantage and velocity ratio **Skills:** Workshop safety and tool use. Cutting, shaping and sanding pine. Ergonomic template making Drilling, screwing and finishing.	**Endangered Animals** **Technical Knowledge:** Researching into raising awareness about real world problems. Understanding the laser cutting process. The impact of polymers on society and the environment. Calculating area. **Skills:** Designing using CAD/CAM. Laser cutting materials. Mathematical modelling. Testing and evaluating

Year 8 Curriculum

Term 1	Term 2	Term 3
Alimals project **Technical Knowledge:** How electronic systems are powered using renewable and non-renewable energy and the impact on society and the environment. Understanding how Circuits, resistance, voltage and current work.	**Biodiversity project** **Technical Knowledge:** Analyse the work of current designers to see how they solve current and existing problems. Analyse the life cycle of existing products and understand the impact of products on the environment.	**3D printing** **Technical Knowledge:** Understand the impact of new and emerging 3D printing Technology on the future of society. Analyse existing 3D printed products.

Recognise simple components and their symbols. Understand the difference between Ferrous and Non-Ferrous metals and their properties and uses. E.g malleability. **Skills:** Nets/templates to explore various 3D shapes. Cut, shape, file, drill and bend metal. Soldering circuits and components accurately.	**Skills** Researching Sketching Producing an Orthographic drawing. Create wood joints and select specialist tools to help create functioning structural solutions. To work independently to produce a high-quality prototype	Understand the advantages and disadvantages of new and emerging technology such as the internet of things. Understand how 3D printing is changing how products and buildings are manufactured. **Skills** Learn to use specialist tools to create computer based 3D mathematical modelling. Understand how computer aided manufacture works using 3D printers. Create 3D shapes using various computer based modelling tools.

Year 9 Curriculum

Term 1	Term 2	Term 3
Nightlight: **Technical Knowledge:** Recognise and be inspired from the past work of designers. Use more advanced electrical and electronic systems to power and programme a light via computing a microcontroller to respond to various inputs and outputs. Learn about the purpose of flowcharts, electrical components and their symbols. To understand how different polymers are heated and the difference between Thermo-polymers and Thermo-setting polymers including Biopols.	**Skills** To be able to sequence and label parts of the vacuum forming process. Produce an Isometric and CAD drawings. Know how to use various processes to heat and form polymers. To be able to form, cut and bend metal. How to solder a circuit with a sensor and various components. **Biodiversity** (Project to be changed in 2023-24) **Technical Knowledge:**	Understand how to achieve structural and functioning solutions. Analyse the life cycle of existing products and understand the impact of products on the environment. **Skills** Researching sketching Produce an Orthographic drawing. Create wood joints and select specialist tools to help create functioning structural solutions.

	Create a product that can increase biodiversity in a garden. Analyse the work of current designers to see how they solve current and existing problems.	To work independently to produce a high-quality prototype.

KS3 Homework
Pupils are given a range of homework tasks every half term, each one is linked to the current project work that they are doing in class. This is a mixture of knowledge and design at home tasks and theory based on the current project learning intentions.

Year 10 Curriculum

Term 1	Term 2	Term 3
Lighting project: 1.6 Electronic systems 1.7 Programmable components 1.17 using communication techniques to present ideas. **Portable chair. (User centred design)** 1.8 Ferrous and Non-Ferrous metals. 1.12 Natural Timbers 4.5 Calculating quantity 1.11 The Categorisation of fibres/1.4 Technical textiles 4.8 Surface treatments. **Test (1) on this term's Topics** 1.16 Use of different design strategies.	**3D printed product** 4.1 Design contexts 4.2 Sources of polymers 4.3 selecting polymers. 1.2 Life Cycle Analysis **Test (2) on this term's Topics** 1.14 Challenges that influence the process of design and making. 1.10 Thermoforming and Thermosetting polymers 4. 7 specialist techniques for making prototypes. 4.6 Alternative manufacturing processes. **Test (3) on this term's Topics**	**Mini NEA context:** 1.14 Challenges that influence the process of design and making. 1.15 Investigate and analyse the work of past professionals. 1.17 Using communication techniques. **June 1st NEA contexts announced** Begin NEA research, designing and iterative design Process. Outline of the problem Researching existing products. User's needs and Wants Questionnaires

1.17 Develop, communicate, record and justify design ideas, applying suitable techniques 1.9 Paper and boards.		

Year 11 Curriculum

Term 1	Term 2	Term 3
NEA continued– Specification and further research Modelling/designing Design reviews Materials and further research Development/ making Final design review Mock exam revision	Making of final prototype NEA log of processes and E-portfolio. Testing and modifications Health and safety log Complete prototype for NEA Evaluate Easter Deadline for GCSE NEA.	Revision lessons of previously taught topics. Exam practice questions and papers. Final Exam (50% of overall grade)