Design Technology Key Stage 4 Curriculum 2023 - 2024

	Year 10			Year 11		
	Knowledge and skills	Enrichment	Additional information e.g. Cross-Curricular	Knowledge and skills	Enrichment	Additional information e.g. Cross-Curricular
Cycle 1	• Production techniques and systems – automation • Enterprise • Market pull and technology push • People, society and culture • Sustainability and the environment • Critical evaluation of new and emerging technologies – planned obsolescence • Design for maintenance • Investigate, analyse and evaluate the work of past and present designers/ companies • Renewable and non-renewable resources • Energy generation and storage • Systems approach to designing • Mechanical devices • Developments in new materials • Materials and their working properties Ecological and social footprint • Using and working with materials • Commercially available types and sizes of materials • NEA style project (initial research, specification, initial ideas) Alessi key fob (10 lessons)	STEM activity Life cycles Life Cycle Assessment(LCA) | KS3 KS4 Free Teaching Resource (stemcrew.org)	Problem solving and decision making involved in development of design ideas Careers: Graphic designer	Completion of individual NEA projects: It's intended to be an iterative process so the learning activities will be directed by the student and will depend on their project. (13 week cycle 32 hours) **HW:** Revision of key topics Ongoing research to inform NEA project **Ethos and Vision** Completion of NEA to secure qualifications	STEM activity Modern materials Smart and Modern Materials: Design technology | STEM Crew	NEA is based on students solving a genuine problem they have identified Design element requires students to use decision making Careers: Architect

	HW: • Categories of polymers – the differences in their properties and how they are utilised. (Alessi project) • Manufacturing techniques – rotational moulding, injection moulding, vacuum forming, etc. (Alessi project) • The use of additives and fillers. • Stock forms. • Adhesives used with polymers. (Alessi Project) **Ethos and Vision** Students learn about environmental, ethical and social issues in relation to the design, manufacture, use and disposal of products.					
Cycle 2	• Specialist techniques and processes • Material Management • Quality control • Ethical and social issues • Surface treatments and finishes • Forces and stresses • NEA style project 2 (Using primary and secondary data to understand client and/or user needs. Interviews, constraints. Writing a design brief and specifications) Desk tidy project (woods) Practical work: 3D Prototypes. Marking out, cutting using electric fret saw and hand tools. Wood joints, filing, drilling and using glass paper with a sanding block. Adding a finish.	STEM activity Mechanisms Mechanisms Teaching Resource | Pressure Force Area Worksheet (stemcrew.org)	Problem solving and decision making involved in practical lessons Careers: Product development	• Completion of NEA project (final evaluations and photographs of made outcomes) • Exam revision according to assessments of class needs (12 week cycle 30 hours available. Time for NEA: 10 hours) **HW:** Revision of key topics Ongoing research to inform NEA project **Ethos and Vision** Completion of NEA to secure qualifications	STEM research materials Materials and their uses. Key Stage 3 & 4 teaching resources (stemcrew.org)	NEA is based on students solving a genuine problem they have identified Design element requires students to use decision making Careers: web design

	• **HW:** Categories of woods – characteristics of the trees, properties and uses. • The life cycle of wood. • Manufactured boards- advantages/disadvantages. • Production methods-wood turning, manipulating flexi ply, etc. • Stock forms. • Finishes for woods and manufactured boards. • Adhesives used with woods and boards. • Recycling issues. **Ethos and Vision** Understanding the needs of a range of users.					
Cycle 3	• Design strategies • Communication of design ideas (drawing techniques) • Selection of materials and components • Tolerances • Using and working with materials • Surface treatments • Completion of NEA style project 2 (design development, prototypes, evaluation) • Introduce context for 2023 submission **HW:** • Categories of metal, alloys. • Production methods – die casting, spinning, lathe, sand casting, etc.	Research a designer that inspires you – what is their background? What do you find inspiring about their work? Design a product in their style.	Problem solving applying perspective in drawings Careers: trades people (carpenter etc) cross curricular link with constructio n	• Exam revision according to assessment of needs. **HW:** Revision **Ethos and Vision** • Completion of NEA to secure qualifications		

	• Stock forms. • Metal ore extraction process. • Permanent/temporary joining methods. • Finishes for metals. • Recycling issues. **Ethos and Vision** Develop understanding of the needs of others					