## Subject Curriculum Intent:

This qualification enables students to understand and apply iterative design processes through which they explore, create and evaluate a range of outcomes. It enables students to use creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values. It gives students opportunities to apply knowledge from other disciplines, including mathematics, science, art and design, computing and the humanities

This qualification follows the Edexcel GCSE Design and Technology curriculum found here.

The majority of the specification will be delivered through design and making activities. Pupils must be able to make the connections between theory and practise and apply their understanding to solve design problems. Pupils will be assessed in one examination and one NEA task.

Assessment and Feedback Opportunities:	Prior Knowledge:
Regular in class verbal feedback for both theory and practical lessons.	Key words cemented within KS3 lessons.
Topic tests and feedback sessions embedded into the curriculum plan.	Manufacturing processes
Mini whiteboard activities.	Solving design problems
Peer and self assessment tasks	Use of CAD/CAM
Summative end of year assessments and mock examinations, question and	How technology impacts individuals, society and the environment
answer	Identifying needs, generating ideas and realising products
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**Literacy:** Key word/glossary developments with SPAG embedded within theory tasks. Extended writing development through exam-style questions. Descriptive adjectives of sensory analysis and evaluation, analysis of information, explanation, and justification skills, interpreting data.

Numeracy: Arithmetic and numerical computation, handling data, graphs, geometry and trigonometry.

**Spiritual, Moral, Social and Cultural:** Considering the wider societal impact of their design decisions, including cultural influences, ethical considerations, sustainability prices, the needs of diverse users. Fostering collaboration, respect for others' ideas, and critical reflection on the potential consequences of their creations. Using design thinking to address real-world issues with a mindful approach to social responsibility.

**Careers Links**: Aerospace engineer, architect, automotive engineer, chemical engineer, civil engineer, designer, electrical engineer, mechanical engineer, software designer, carpenter, draughtsperson, robotics engineer, stonemason, ergonomist, interior designer, graphic designer

**Skills Development:** Problem solving, creativity, critical thinking, understanding of technical principles of materials, mechanical devices and systems, practical skills for working with a range of materials, CAD/CAM, presentation, communication and evaluation skills.

## **Curriculum Overview:**

Year 10			
Term 1	Term 2	Term 3	
Key Topics, Concepts, Knowledge and Skills Developed: Core content 1.1 The impact of new and emerging technologies 1.2 How the critical evaluation of new and emerging technologies informs design decisions 1.3 How energy is generated and stored in order to choose and use appropriate sources to make products and power systems 1.4 Developments in modern and smart materials, composite materials and technical textiles 1.5 The functions of mechanical devices used to produce different sorts of movements 1.6 How electronic systems provide functionality to products and processes 1.7 The use of programmable components to embed functionality into products in order to enhance and customise their operation 1.15 Investigate and analyse the work of past and present professionals and companies in order to inform design (Project 1)	Key Topics, Concepts, Knowledge and Skills Developed: Core content 1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metals 1.9 The categorisation of the types, properties and structure of papers and boards 1.10 The categorisation of the types, properties and structure of thermoforming and thermosetting polymers 1.11 The categorisation of the types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles 1.12 The categorisation of the types, properties and structure of natural and manufactured timbers 1.13 All design and technological practice takes place within contexts which inform outcomes 1.14 Investigate environmental, social and economic challenges when identifying	Key Topics, Concepts, Knowledge and Skills Developed: Specialist Material Area - Timbers 7.1 Design contexts 7.2 The sources, origins, physical and working properties of each natural and manufactured timber and their social and ecological footprint 7.3 The way in which the selection of each natural and manufactured timber is influenced 7.4 The impact of forces and stresses on each natural and manufactured timber and how they can be reinforced and stiffened 7.5 Typical stock forms, types and sizes used in order to calculate and determine the required quantity of each natural and manufactured timber 7.6 Alternative processes that can be used to manufacture typical products of each natural and manufactured timber to different scales of production 7.7 Specialist techniques, tools, equipment and processes that can be used on each	

<ul> <li>1.16 Use different design strategies to generate initial ideas and avoid design fixation (Project 1)</li> <li>1.17 Develop, communicate, record and justify design ideas, applying suitable techniques (Project 1)</li> </ul>	opportunities and constraints that influence the processes of designing and making	natural and manufactured timber to shape, fabricate, construct and assemble a high-quality prototype 7.8 Appropriate surface treatments and finishes that can be applied to each natural and manufactured timber for functional and aesthetic purposes
Assessment and Feedback:	Assessment and Feedback:	Assessment and Feedback:
Summative: Topic tests	Summative: Topic tests	Summative: Topic tests
Formative: Starter tests, mini whiteboards,	Formative: Starter tests, mini whiteboards,	Formative: Starter tests, mini whiteboards,
verbal feedback, exam questions	verbal feedback, exam questions	verbal feedback, exam questions
Independent Study:	Independent Study:	<b>Independent Study:</b>
Recall tasks, comprehension tasks,	Recall tasks, comprehension tasks,	Recall tasks, comprehension tasks,
evaluation tasks	evaluation tasks	evaluation tasks

Year 11				
Term 1	Term 2	Term 3		
Key Topics, Concepts, Knowledge and Skills Developed:	Key Topics, Concepts, Knowledge and Skills Developed:	Key Topics, Concepts, Knowledge and Skills Developed:		
NEA, contextual challenge, theme set by exam board. Investigate, specification, design, review, develop, review.	NEA, contextual challenge, theme set by exam board. Manufacture, testing and evaluation.	Revision and completion of theory examinations.		
Assessment and Feedback: Summative: Mock exam and feedback. Group feedback on NEA tasks in line with assessment guidelines. .Formative: Starter tests, mini whiteboards, Verbal feedback. Exam questions.	Assessment and Feedback: Summative: Group feedback on NEA tasks in line with assessment guidelines. Formative: Starter tests, mini whiteboards, Verbal feedback. Exam questions.	Assessment and Feedback: Summative: Final examination Formative: Starter tests, mini whiteboards, Verbal feedback. Exam questions.		
Independent Study: Recall tasks, comprehension tasks, evaluation tasks	<b>Independent Study:</b> Recall tasks, comprehension tasks, evaluation tasks, exam questions	<b>Independent Study:</b> Recall tasks, comprehension tasks, exam questions		