Curriculum Intent Framework

Subject:	**Design and Technology**
Subject Curriculum Vision:	In Design and Technology, we strive to offer a broad and balanced curriculum that challenges our students to be the best version on themselves. We emphasise the importance for pupils to develop traditional design and making skills, alongside the use of new technologies throughout their 7-year journey and beyond.

Core Subject Values:

Dignity and Respect	We enable pupils to feel a sense of self-worth within the Design and Technology Department. During KS3, we develop pupils' respect for the environment through promoting sustainability and questioning its role in society. Pupils are guided to respect themselves and peers through creating a positive relationships and learning environments. We believe all pupils should feel safe to contribute and express their opinions.
Wisdom, Knowledge and Skills	We promote the transfer of cross curriculum skills through STEM. Pupils are encouraged to develop pupil initiative solutions to the challenges they face. Pupils discuss and feedback on all aspects of their work and make changes if needed. Pupils are challenged to develop their understanding of subject specific terminology. Skills are embedded to develop their learning and knowledge throughout KS3. We believe a solid grasp of the design and making skills alongside an understanding of subject terminology is key to successfully embed our teaching values during their 7-year journey.
Hope and Aspiration	Each unit is designed to deliver a set of skills which can be developed, transferred and used to improve the way they work through KS3. Students are given the opportunity to develop a wide range of designing and practical skills which can be transferred to many different subjects and real-world situations. Pupils are encouraged to stretch and challenge themselves as Design and Technology we believe is vital for later life. The curriculum is designed to create meaningful opportunities for pupils to explore different materials and manufacturing techniques to prepare them for the future. As teachers we share our experiences and passion for Design and Technology within our teaching.
Extra-curricular Provision	We organise and run the Scalextric4school national finals with support for Hornby, Boxford and PDS Vison. We have developed a programme for the project which is shared with other schools. Students are taught how to Design Make and Race their own Scalextric cars. www.Scalextric4schools.com KS3 Girls Engineering club runs form October half term deigned to promote the subject to girls and help to increase the number opting and remaining in the subject through KS4 and 5. Year 11 and 13 Intervention Sessions run twice a week to support students with the NEA element of the course. Maximising the use of our CAD/CAM facilities.

KS3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	**Introduction to DT** 3Ddrawing and CAD/CAM. Introduction of isometric drawing and sketching, including Rendering Techniques. Wood Joints and Tools		**Mini Figure project**. Using a wide range of skills including CAD/CAM pupils will design and build their own mini figure		**Smoothie Carton Design Project** Logo Design and Packaging. Students will learn the 5 key points all logos should have and why we need packaging. Creating a card Prototype of their Smoothie Carton	
Year 8	**Edison Robots.** Applying previous knowledge of scratch into practical programming of the Edison robots to complete a series of complex challenges.		**Scalextric Assessable Controllers.** Working from a Brief set by Scalextric as part of the Inspired By Industry content from DATA Students will investigate how to redesign a prototype controller that is more assessable for users. Focusing on product investigation, CAD/CAD design work and foam modelling		**Key Bar Project.** Working from Engineering drawing pupils work to product a Key bar to store keys. Pupils are introduced to Engineering techniques and equipment. Learning how to accurately mark out and work in metal	
Year 9	**NEA practice Ali-Mals**. Putting skills into context and building on knowledge for year 8 Key bar project. Students design and manufacture a folded Aluminium mood light including electronics with elements that are produced using computer control, balanced with traditional workshop skills.		**NEA practice Trainers.** Pupils will build on their logo work form year 7 to develop their own brand of trainer. They will then use Card modelling techniques to prototype and develop their own model. Skills which are needed in year 10-11 to develop their NEA ideas.		**NEA practice Wearable Technology** Working from a Brief set by Enthuse as part of the Inspired By Industry content from DATA Product Design block modelling project. Builds on the CAD and marker rendering work from the year 7 in the mini figure project. Focusing on Wearable Technology. Pupils will develop their own ideas, construct block models, and create a 3D computer model which could be 3D printed.	
Projects in KS3 Design and Technology may not be taught in the order shown above. But all projects will be covered each year.						

KS4

<table>
<tr><th></th><th>Autumn 1</th><th>Autumn 2</th><th>Spring 1</th><th>Spring 2</th><th>Summer 1</th><th>Summer 2</th></tr>
<tr><td rowspan="3">Year 10
AQA GCSE
D&T</td><td colspan="3">Mini Coursework Project Personal Storage
• Sketching techniques to design and present ideas.
• Annotation and labelling.
• The use of ICT software to produce, modify and enrich design proposals techniques.
• Engineering drawings
• CAD applications to produce and communicate design proposals
• Communication of design proposals</td><td>Preparation for Coursework project begins.
• Identifying a problem and client.
• Creating a design identity</td><td>Assessment Objective 1
Investigation.
• Design Brief
• Research
• Specification</td><td>Assessment Objective 2 Design ideas.
• Design ideas
• Further research
• Review</td></tr>
<tr><td colspan="2" rowspan="2">Theory work to be taught alongside other units throughout year 10 and 11</td><td colspan="2">Exam Preparation 3.1 Core technical principles</td><td colspan="2">Exam Preparation 3.2 Specialist Technical Principles.</td></tr>
<tr><td>• New & emerging technologies.
• Energy generation.
• New Materials</td><td>• Systems approach to designing.
• Mechanical systems
• Materials and Properties.</td><td>• Selection of materials
• Forces and stresses
• Social footprint
• Sources and origins
• Working with materials</td><td>• Stock Forms
• Scales of production
• Specialist techniques
• Surface finishes.</td></tr>
<tr><td rowspan="2">Year 11
AQA GCSE
D&T</td><td>Assessment Objective 2
Development.
• Design ideas.
• Development
• Review
Final idea</td><td>Assessment Objective 3
Practical.
Manufacturing of major project.
• Plan of make
• Assembly logs
• developments</td><td>Assessment Objective 4
Evaluation.
Evaluation and Testing</td><td colspan="2" rowspan="2">Exam Preparation.

Exam Questions focusing on:
3.1 Core technical principles.
3.2 Specialist Technical Principles.
3.3 Designing and making principles.

Exam techniques
Longer answer questions.
Designing questions
Maths Questions.</td><td></td></tr>
<tr><td>PPE Prep Exam questions and Model answers.</td><td colspan="2">Exam Preparation 3.3 Designing and making principles.
demonstrate and apply knowledge and understanding of designing and making to the following areas:
• investigation, primary and secondary data
• design strategies
• communication of design ideas
• prototype development
• material management
• specialist tools and equipment
• specialist techniques and processes.</td><td></td></tr>
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KS5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12 NEA	Mini Coursework project. Sketching and 3D CAD skills are required to design and manufacture a working Bluetooth speaker. 3D printing and block modelling skills are developed throughout.			Coursework project begins. Identifying a problem and client	**Assessment Objective 1** Investigation. • Design Brief • Research • Specification	**Assessment Objective 2 Design ideas.** • Design ideas • Further research • review
Theory 3 lessons a fortnight		Materials. 1.1 Woods 1.2 Metals 1.3 Polymers 1.4 composites	1.2 Performance characteristics of materials. 1.3 Material properties	3.1-3.4 Processing and Joining techniques of materials	PPE Prep Exam questions and Model answers 5.3 The influence of aesthetics, ergonomics	5 Factors influencing the development of products
Year 13 NEA	**Assessment Objective 2 Development.** • Design ideas. • Development • Review • Final idea	**Assessment Objective 3 Practical.** Manufacturing of major project. • Plan of make • Assembly logs • developments		**Assessment Objective 4** Evaluation. Evaluation and Testing	Final exam prep Exam Question and Techniques. Longer answer questions. Designing questions Maths Questions.	
EXAM 3 lessons a fortnight	PPE Prep Exam questions and Model answers	Methods of production One-off production Batch production High-volume production	Production scheduling and production logistics Robotics in production Materials handling systems Flexible manufacturing systems IFMSI. modular/cell production systems Lean manufacturing using just-in-time Jit systems Standardised parts, bought-in components Quick response manufacturing [QRMI Data integration Concurrent manufacturing			