Herschel Grammar School
Design & Technology Curriculum Overview 2025/26

Curriculum Intent
In line with the National Curriculum, we require our KS3 modules to allow all students to gain confidence in using a variety of materials and processes safely. We will meet the needs of all learners through appropriate support. We want them to be creative and to enjoy a challenging scheme of work, which prepares students for the next Key Stage as well as developing valuable transferable skills. With a strong practical focus, Design and Technology at KS4 allows students to develop unique creative outcomes as well as to fail safely and solve more complex problems. Students' learning is contextualised through trips to manufacturing plants, museums and STEM competitions. Through the high quality of teaching, provision of resources and extra-curricular offerings, we help students to make sense of their learning and connect it to other areas of the curriculum as well as the wider world. KS4 learners will be well prepared for KS5 Product Design. In KS5 they will be more innovative and experiment widely with materials, processes and their ideas. The journey will be rigorous as well as challenging, providing a strong foundation for further education courses, particularly those related to engineering and design. They will be proud of their A level portfolio of work and use this experience to inform their approach to further study or employment.
Curriculum Impact
We know through pupil voice surveys and conversations with students and parents that students enjoy Design and Technology lessons. The strong GCSE uptake is evidence that students want to continue their studies and value the skills and experiences that the subject offers. Students are well equipped to be collaborative creative thinkers and problem solvers. The passion and deep subject knowledge of the teaching staff is reflected in the enthusiastic engagement and enjoyment students show and express in lessons. The risk-taking attitude embedded in the curriculum and teaching enables students to develop self-confidence and self-worth. This has been highlighted by parents during parent teacher interactions, learning walks and through observations by both internal and external observers. A-level students are nurtured in small groups, which include an increasing number of young women. We see them develop into confident, articulate individuals with a passion for solving problems in the wider world. They are successful in gaining places at their chosen further education establishments and in industry experience. Alumni are currently successful in the fields of engineering, design, manufacturing and prosthetics. They maintain contact with the school and connect with younger students to help them make their own career choices.

Through education, we have the privilege of engaging directly with children and young people who:

- are passionate about the natural world
- want to do their best to protect it
- can influence their wider communities

Throughout this document, whenever the following icon is used  , it indicates that the teaching and learning is linked to one or more of the following:

- nature
- the causes and impacts of climate change
- careers in the green economy
- the importance of sustainability

Year group	Year 7
Rationale for sequencing	Modules are taught on rotation, so students will experience these in a different order. We focus on ensuring that students can use a range of tools and equipment safely. Projects are designed to access a wide variety of materials and techniques, as well as learning foundation subject knowledge and developing creativity.
Module 1	
FOOD PREPARATION & NUTRITION - Cook and Eat Well	FOOD PREPARATION & NUTRITION - Cook and Eat Well
To develop practical food skills through a range of focused practical tasks (mainly savoury dishes prepared). Extend knowledge of safe working practices in a food area. Understand and apply the principles of nutrition and healthy eating. Understand the source, seasonality and characteristics of a range of ingredients Useful website: http://www.foodafactoflife.org.uk/	Students prepare and cook a range of food products: Salsa, Couscous Salad, Stir Fry, Pizza, Cheesy Scones Fruit Crumble (using seasonal fruits) Banana Muffins Safe and organised routines for working are established in these practical sessions
Module 2	
DESIGN & TECHNOLOGY – Key Drawing Skills and CAD/CAM Eco project	DESIGN & TECHNOLOGY – Key Skills and CAD/CAM Eco project
Key design skills such as drawing, rendering, thick/thin line, colour theory, surface developments and construction. Technical drawing using 2D design. Orthographic / isometric / perspective. Sustainable materials, 'design for good', ease of disassembly and concern for environment. 6Rs.	Key design skills such as drawing, rendering, thick/thin line, colour theory, surface developments and construction. Technical drawing using 2D design. Orthographic / isometric / perspective. Sustainable materials, 'design for good', ease of disassembly and concern for environment. 6Rs
Module 3	
DESIGN & TECHNOLOGY- Trophy Project	DESIGN & TECHNOLOGY- Trophy Project
Students learn basic workshop and designing skills through the designing and manufacture of a trophy. Manufacturing products out of timber, metals and plastics. Workshop safety. Use of CAD/CAM. Design processes.	Students learn basic workshop and designing skills through the designing and manufacture of a trophy. Manufacturing products out of timber, metals and plastics. Workshop safety. Use of CAD/CAM. Design processes.

Module 4	
DESIGN & TECHNOLOGY- **Promotional Product**	**DESIGN & TECHNOLOGY- Promotional Product**
Students practice hand drawing and CAD designing skills and surface developments through the designing and construction of an infinity cube / promotional product and packaging Drawing and rendering skills Manufacturing skills Researching and presentational skills. Problem Solving. Challenge & Experimentation	Students learn hand drawing, CAD designing skills and surface developments through the designing and construction of an infinity cube / promotional product and packaging Drawing and rendering skills Manufacturing skills Researching and presentational skills. Problem Solving. Challenge & Experimentation

Assessment Plans:	
Module 1	Practical work and end of module test.
Module 2	Orthographic / Isometric projection in booklet
Module 3	Plan of manufacture / practical work / end of module test
Module 4	Package designing / Final product making

Year group	8

Rationale for sequencing	Modules are taught on rotation, so students will experience these in a different order. We focus on ensuring that students can use an increasing range of tools and equipment safely. Projects are designed to enable access to a wider variety of materials and techniques, as well as building subject knowledge and developing creativity.

Module 1	
FOOD PREPARATION & NUTRITION - Good to Know Emphasis is on extending knowledge of ingredients and equipment, whilst developing a wider range of practical skills and techniques. Main topics include the principles of good nutrition and healthier eating, the science or working properties of ingredients and how economic factors influence our choice of food.	**FOOD PREPARATION & NUTRITION – Good to Know** Students are taught ways to adapt recipes fairly imaginatively. They develop more confidence in adaptation of recipes, in order to produce healthier versions of dishes, using available ingredients. More confident students may incorporate skills and techniques from other recipes.
Module 2	
DESIGN & TECHNOLOGY- Mechanical Toy Project Students design and manufacture a mechanical toy out of timber and plastics. Main topics include different types of motion, use and design of cams, CAD/CAM, modelling skills and quality manufacture.	**DESIGN & TECHNOLOGY- Mechanical Toy Project** Students design and manufacture a mechanical toy out of timber and plastics. Main topics include different types of motion, use and design of cams, CAD/CAM, modelling skills and quality manufacture.
Module 3	
DESIGN & TECHNOLOGY - Thermochromic mug Students will design the artwork for a thermochromic mug which is sublimated underneath the black smart layer. They will also design and produce the packaging for the mug ready for sale. They will use the mug press, laser cutter, laptops (2D Design), along with key pieces of equipment.	**DESIGN & TECHNOLOGY - Thermochromic mug** Students will design the artwork for a thermochromic mug which is sublimated underneath the black smart layer. They will also design and produce the packaging for the mug ready for sale. They will use the mug press, laser cutter, laptops (2D Design), along with key pieces of equipment

Module 4	
DESIGN & TECHNOLOGY – Steady Hand Game Students will learn how to make products work using electronic inputs and outputs. They will solder components to make a steady hand game. This project also involves using architectural inspiration for their design work, forming polymers on the vacuum forming machine, printing textiles using the sublimation printer / heat press and learning to use CAD/CAM to create vinyl decoration.	**DESIGN & TECHNOLOGY – Steady Hand Game** Students will learn how to make products work using electronic inputs and outputs. They will solder components to make a steady hand game. This project also involves using architectural inspiration for their design work, forming polymers on the vacuum forming machine, printing textiles using the sublimation printer / heat press and learning to use CAD/CAM to create vinyl decoration.

Key Assessment Plans:	
Module 1	Practical work and end of module test.
Module 2	Evaluation / practical work / end of module test
Module 3	Package designing/ Practical work / end of module test
Module 4	Plan of manufacture/ Practical work / end of module test

Year group	9

Rationale for sequencing	Students specialise in DT in Year 9. Projects are taught on rotation so that all students can access our workshop spaces during the year. So not all students are studying the same module at the same time. Students learn to draw technically with accuracy and design. They use more detailed research to influence their design work and manufacture more individual products.

Term 1	
Half term	**Half term**
Iterative design modelling project – contextual challenge **(5 weeks)** Writing a brief from a context. Generating ideas, modelling and problem-solving team project. **Start next project**	**Manufacturing project / Sustainable and Responsible Design** (Pterodactyl - man made boards) Skills in manufacturing a high-quality product by hand, using plywood and appropriate finishing techniques. Computer Aided Design, exploded isometric sketches. Revision of sketching and rendering techniques and flow charts. Focus on sustainable and responsible design.
Term 2	
Half term	**Half term**
Complete manufacturing project (Pterodactyl - man made boards) **Examination preparation and practice** Exam is based on key drawing skills **Start next project**	**Powered Product** **(clock or speaker)** Design history/ study of brands**.** Product analysis. Techniques to generate ideas and avoid design fixation. Key design skills revisited from Year 7 (rendering, thick/thin line, colour theory, surface developments and construction. Technical drawing using 2D design. Orthographic / isometric / perspective)
Term 3	
Half term	**Half Term**
Powered Product. Design development using modelling and CAD. Commercial manufacturing processes. Understanding energy sources of ways of powering products as well as environmental impact. Product lifecycles.	One off production of final high-quality product using polymers and timber. Evidencing manufacture, testing and evaluating products **Material properties and their enhancement**

Anthropometrics and ergonomics. 🌍	Team bridge building project focusing on learning about material properties and their enhancement. **Recap of knowledge of forces from Yr 7 (for 22 and 23 cohorts) From Sept 24 this will be new knowledge in Yr 9.**

Key Assessment Plans:	
Term 1	Key design skills / Pterodactyl practical / Academic poster
Term 2	Examination based on key design skills
Term 3	Clock project electronic portfolio – holistic

Year group	10

Rationale for sequencing	Project are designed to prepare students for the NEA which starts on June 1st. Design and manufacturing skills are further developed to a high standard. Theory is woven into teaching the projects to prepare students for the GCSE exam.

Term 1	
Half term	**Half term**
Pewter Project Designing using biomimicry for inspiration. Presenting design ideas to GCSE standard Manufacturing, packaging and branding small pewter products. Using 2 D design to create an accurate mould and packaging for the product. Understanding of industrial and workshop processes pertaining to metals, paper and card products Branding **Industry visit: Mini Factory Oxford** Related theory involves JIT manufacturing and QC.	Pewter project continued Designing using biomimicry for inspiration. Presenting design ideas to GCSE standard Manufacturing, packaging and branding small pewter products. Using 2 D design to create an accurate mould and packaging for the product. Understanding of industrial and workshop processes pertaining to metals, paper and card products. Branding **Start practice NEA Contextual challenge.** Context investigation Initial research Client investigation Research into designers and brands
Term 2	
Half term	**Half term**
Continue practice NEA Initial ideas Hand modelling and evaluation Developed sketches **Exam preparation**	**Exam preparation** **Manufacturing project** Aim to be use every process in the workshop (wastage/ addition/ forming / finishing independently to build confidence for the NEA.
Term 3	
Half term	**Half Term**
Manufacturing project Aim to be use every process in the workshop (wastage/ addition/ forming / finishing independently to build confidence for the NEA.	**GCSE NON-EXAMINED ASSESSMENT** Select context from AQA. Initial research, client identification, interviews, product analysis. Generate brief and design specification.

Manufacturing specification. Orthographic drawings, isometric CAD, plan of manufacture, cutting list.	Section A: Context analysis, Research Section B: Brief and Specification Section C: Design Ideas and initial modelling

Key Assessment Plans:	
Term 1	Pewter Project Portfolio
Term 2	NEA practice
Term 3	Exam / Manufacturing project / GCSE NEA sections A-C

Year group	11

Rationale for sequencing	NEA to be completed by Feb half term, in order to then concentrate on additional theory and exam revision.

Term 1	
Half term	**Half term**
GCSE Non-Examined Assessment (NEA) Initial ideas / hand modelling Developed sketches	NEA continued - Developed modelling and prototype manufacture GCSE MOCK EXAM PREPARATION
Term 2	
Half term	**Half term**
NEA continued - Final prototype manufacture Manufacturing specification Evaluation and testing	EXAM PREPARATION
Term 3	
Half term	**Half Term**
EXAM PREPARATION	

Key Assessment Plans:	
Term 1	NEA submissions sections A – D
Term 2	Mock Exam and NEA final submission – all sections A - F
Term 3	GCSE exam

<table>
<tr><td>Year group</td><td colspan="2">12</td></tr>
<tr><td>Rationale for sequencing</td><td colspan="2">Systematically builds upon skills and knowledge with an increase in challenge throughout the year. This is preparing them for undertaking their final A Level project. 3 hours theory per fortnight along side the practical projects.</td></tr>
<tr><td colspan="3">Term 1</td></tr>
<tr><td>Half term</td><td colspan="2">Half term</td></tr>
<tr><td>Solid Works
Course based on the integration of CAD within the design environment

• Materials and their applications
• Performance characteristics of materials
• Enhancement of materials</td><td colspan="2">Disassembly and Project Realisation
Investigation of products, their users and their incorporation into the modern world. Sketching, rendering and designing skills (including modelling) are investigated throughout this project.

• Forming, redistribution and addition processes
• The use of finishes
• Modern and industrial scales of practice</td></tr>
<tr><td colspan="3">Term 2</td></tr>
<tr><td>Half term</td><td colspan="2">Half term</td></tr>
<tr><td>Key Skills - Manufacturing
Opportunity to understand industry standard manufacturing processes and finishing processes in all key resistant materials through the manufacture of a given product.
Project solidifies theoretical knowledge through hands-on manufacturing.

• Digital design and manufacture
• The requirements of product design and development
• Health and safety</td><td colspan="2">Facsimile Modelling
Design Development, Model Manufacturing, evaluating, Researching, Design ideas & Developments

• Protecting designs and intellectual property
• Design for manufacturing, maintenance, repair and disposal</td></tr>
<tr><td colspan="3">Term 3</td></tr>
<tr><td>Half term</td><td colspan="2">Half Term</td></tr>
<tr><td>Bluetooth Speaker or lighting project
Focusing on Form and function through bought-in components and Design Development to create a branded promotional speaker or light

Mock exam Paper 1</td><td colspan="2">Bluetooth Speaker or lighting project
Research section and design brief generation for A2

Situation investigation and initial design idea generation</td></tr>
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• Feasibility studies • Enterprise, marketing and the development of products • Design communication	

Key Assessment Plans:	
Term 1	Holistic summative grade based on core knowledge and analysis skills activities/tasks. Short topic tests and practice questions
Term 2	Holistic summative grade based on core knowledge and analysis skills activities/tasks. Short topic tests and practice questions
Term 3	Grade achieved in mock exam.

Year group	13
Rationale for sequencing	Allows students to make progress following the design process during their Major Project.

Term 1	
Half Term	**Half term**
Design, make and evaluate major project AO1 (section A & B) • Design methods and processes • Design theory • Technology and cultural change	**Design, make and evaluate major project** AO2 (Section C) Development of design proposal Specific theory assignments Final hand-in for development section of folder • Design processes • Critical analysis and evaluation • Selecting appropriate tools, equipment and processes
Term 2	
Half term	**Half term**
Design, make and evaluate major project AO2 (Section D) Development of design prototype [Manufacturing] • Accuracy in design manufacture • Responsible design • Design for manufacture and project management • National and International standards in product design	**Design, make and evaluate major project** AO2 (Section D) Development of design prototype [Manufacturing] Specific theory assignments Final Hand in of manufacturing section of folder and completed major project practical piece • **Mock exam Paper 1 and Paper 2**
Term 3	
Half term	**Half Term**
Design, make and evaluate major project AO3 (Section E) Analysing and evaluating **Final Hand in – Major Project** **Complete core knowledge and Exam preparation**	**External examinations**

Key Assessment Plans:	
Term 1	Progress with design, make and evaluate major project and UCAS prediction. Short topic tests and practice questions
Term 2	Progress with design, make and evaluate major project. Short topic tests and practice questions. Mock exam
Term 3	Final hand-in of major project.