Design and Technology on a Page 2024 / 2025

Design and Technology

Subject Leader: Andrew Turner

CURRICULUM INTENT:

Design and Technology will raise awareness about the design process and creativity products go through in their life cycle. From the raw materials, to the preparation and manufacture. The learners will look at what customers expect from a product, how it is designed, made and used and finally how it is disposed of and how these stages affect the environment, raising the understanding and appreciation of the products we use and how it changes the world in which we live. They will follow this strategy to produce a series of product solutions to a variety of briefs across four material areas. They will explore Food Preparation and Nutrition, Textile Design, Timber, Polymers and Systems throughout their school journey.

Design and Technology on a Page 2024 / 2025

Year 7	Year 7 in Design Technology is where students will see an introduction into a range of group and individual tasks, there is extensive modelling, and students will undertake a range of materials and processes as well as gain knowledge of the effects on the design and manufacturing world. Our students gain experience of four material areas throughout the year. These are: Timber Product Design (multi material) Food Preparation and Nutrition Textile Design	
	Term 1	On rotation around Timber, Product Design, Food and Textiles with 10 weeks in each. In timber you will explore hand tools and design and make an animal habitat. In Textiles you will develop embroidery and machine work looking based on Artist Victoria Villasana. In food you will explore kitchen hygiene and a range of preparation and baking styles. In Product Design you will complete a multi material project based on sound.
	Our sequencing allows our learners to work creatively with a variety of materials, gaining insight and confidence in a practical environment using a range of equipment and processes which will build into their GCSE and A Level courses but also give them valuable transferable skills for later life.	

Year 8	Year 8 in Design Technology is where students develop there creativity and accuracy skills using a mix of group and individual tasks, with a focus on production techniques, students gain an insight into green manufacture with an emphasis on sustainability in all areas. gain knowledge of the effects on the design and manufacturing world. Our students gain experience of four material areas throughout the year. These are: Timber Product Design (multi material) Food Preparation and Nutrition Textile Design	
	Term 1	In Food we work on developing food from around the world exploring cultural and creative differences. In Textiles we work on wearable technology looking at and applying anthropometric data to a product along with surface detailing. In timber we are working on lighting and providing shade and in Product Design we are working on the Scalextric 4 Schools STEM project, designing, producing and racing a series of race cars in small groups.
	Our topics are taught in a 9/10 week rotation cycle across the four material areas. The students work on an iterative design strategy across areas accessing key parts of the national curriculum. There is a mix of knowledge finding and practical application and linking into regional and national competitions allows us to work on inspire.	

Year 9	Year 9 in Design Technology is where students will experience a taster of the GCSE courses we deliver and how to best prepare for those. Like the previous two years, students will rotate around Timber Product Design (multi material) Food Preparation and Nutrition Textile Design. There is an emphasis on production processes in each material area along with a series of practical tasks.	
	Term 1	In Product Design, our students focus on a project based on environmental clean up where students follow the design process to design and make a product to help clean up an environment. In timber they will learn about and apply their knowledge of mechanisms and levers into practical environments. In Textiles they look at, pattern making, garment construction and fixings in scale with a theory concentration on applied textiles. In food students are working how to produce a series of healthy, balanced and nutritious dishes whilst looking into the nutritional value and how it can affect them..
	Our students are able to develop their skills and application of learnt knowledge allowing them to gain creativity, accuracy and confidence in their application of Design and Technology, ready to apply them in full for GCSE and A Level over the coming years	

Design and Technology on a Page 2024 / 2025

Key Stage 4

<table>
<tr><td rowspan="3">Year 10</td><td colspan="6">We complete a range of practical tasks based on real world problems, from tooling to sports equipment. They will develop specialist tooling knowledge across a range of materials with the focus on timber, polymers and metals. The design process is backed up with use of the Computer Aided Design, through gaining knowledge of Onshape/Blender and vector graphics software. Students will have weekly exam content knowledge lessons and extensive long answer question support</td></tr>
<tr><td>Term 1 & 2</td><td>The autumn terms focus is on covering a large section of the core content which will subsequently open up new avenues of learning into the deeper learning content. Learners will complete a light version of the NEA, mainly opening up the learners' eyes to the opportunities within a contextual challenge, and how to take a broad approach to designing solutions, whilst focusing on the iterative modelling of a solution to a lower standard than a final GCSE NEA outcome. We will manufacture a series of outcomes to increasing levels of quality, broadening workshop skills and developing independence related to their timber material area.</td><td>Term 3 & 4</td><td>The spring term focus is on developing key NEA skills, giving learners a breadth of material and process knowledge. This term will see learners complete a focused make only project, where two periods per week challenge learners to spend time producing a replica product from technical drawings and stock material, focusing on timber and polymers to deepen their learning in these areas. The second half of the term will challenge learners to focus on conceptual designing using CAD, applying less available materials and workshop technology to encourage more creative and limitless design solutions.</td><td>Term 5</td><td>The summer term focus is on fine tuning specific skills learners need to excel in their NEA, reinforcing their independence, before then making a start on the real NEA in the second half of the term. The first six weeks focus on a small iterative challenge, taking a simple product and turning it into a developed solution that is fit for purpose for a new or existing user. In week seven, the learners will be introduced to the NEA context(s) for the year, released by OCR on June 1st, and commence their digital portfolio of evidence. This will see the learners complete four weeks of work on their submission, and complete 12 hours prior to the Summer break.</td></tr>
<tr><td colspan="6">The learners will develop their understanding of key materials and the NEA through key building blocks throughout the year, developing a clear development cycle that is informed by material choices as the year progresses giving student opportunities explore the iterative design process but also develop knowledge of key design decisions.</td></tr>
<tr><td rowspan="3">Year 11</td><td colspan="7"></td></tr>
<tr><td>Term 1 & 2</td><td>The autumn term focus is on pulling together the research conducted, in a process called clustering down, which then provides the opportunity for learners to write requirements, develop concept ideas, and progress these from rough sketches and sketch models through to working prototypes. The process of prototyping will feel seamless from early ideation to eventually making a final working and testable prototype.</td><td>Term 3 & 4</td><td>The spring term focus is finalising the end prototype, taking the prototype through a series of feasibility tests, and finishing the term by rounding up the NEA work ready for the 1st March Deadline. The first two weeks of this term are set focusing on applied Maths content for their examination and practicing long answer structures to gain maximum marks from each section. This then focuses on Technical requirements for design and manufacture., followed by revision of Implementation of wider issues and Design thinking and communication, mixing in some practical tasks based on exam paper questions in relation to material considerations and testing</td><td>Term 5 & 6</td><td>Our focus for term 5 is on revision of key terms and concepts, how to extract the maximum marks from questions and improving confidence in application of material knowledge into exam questions, recapping Technical understanding and key manufacturing processes and techniques</td><td>Year 11 New Knowledge will be complete by 3/3/2025
Year 11 Coursework deadline is 3/3/2025</td></tr>
<tr><td colspan="7">With the course being split into two distinct sections, we have a focus on the NEA sections to develop the creativity, quality and accuracy of the work produced in school. We also focus on key examination knowledge and how to apply to this in our examination in June.</td></tr>
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Design and Technology on a Page 2024 / 2025

Key Stage 5

Year 12

In Year 12 A Level Design and Technology, we have 3 pathways we follow, we build a series of practical skills, developing technical and material knowledge and application through a series of projects. We work on Computer Aided Design modelling. Have individual and team projects inspire students with a series of competitions and trips to allow them to connect their knowledge to real world environments.

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Review of Transition work. 2 Upskilling projects. Computer Aided Design focus. Technical Principles, Material Application and Product Analysis	Multi material upskilling project. CAD project. Application of Materials	Commercial processes. Using Computer Aided Manufacture in production Project. Maths consolidation	NEA practice. Application of previously taught skills. Accuracy	NEA start (50% of course). User groups and outside influences on design	NEA Design section. Iterative design and mathematics in Design

The course grows as the year goes on. Learners are developing their skill set and what influences the design world for both design, production and use of product. Each practical and theory knowledge builds on the previous experiences

Year 13

Non-Examined Assessment is worth 50% of the course and 2 out of 6 sections have been completed in year 12. Their will be extended written paper support, walking talking papers, visits in industry to see application of design and manufacturing strategies. We will focus on design mathematics and technical drawing skills by hand and CAD. Learners will have weekly targets to complete their NEA's and key deadlines throughout the year to adhere to.

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
NEA Design and Development Iterations and Computer Aided Design elements	NEA Prototype production, client reviews and revision for mock examination. Walking Taking Papers. Problem Solving	NEA Final prototype production and field testing, Evaluation. Mathematical application in design, long answer questions	NEA Evaluation and completion. Extended answers and written paper techniques	Revision Principles of Design and Problem Solving in Design examinations	Year 13 New Knowledge will be complete by 3/3/2025 Year 13 Coursework deadline is 3/3/2025

The Non-Examined Assessment follows a detailed design process which form the building blocks to research, design and produce,, use and evaluate a product. The vast majority of topics are covered in Year 12, with consolidation and revision processes applied during Year 13.

Design & Food Tech on a Page 2024 / 2025

Food Preparation and Nutrition GCSE

Subject Leader: Andrew Turner

CURRICULUM INTENT:

Just like Design and Technology, Food preparation and nutrition will raise awareness about the design process and creativity nutritional products go through. From the raw materials, to the preparation and mass manufacture. The learners will look at what consumers expect from food, how it is developed, designed and made. At Key Stage 3, they will follow this strategy to produce a series of product solutions to a variety of briefs across four material areas. They will explore Food Preparation and Nutrition, Textile Design, Timber, Polymers and Systems throughout their school journey.

Design & Food Tech on a Page 2024 / 2025

Key Stage 4

Year 10

Students do the majority of their learning through practical application of key skills and processes with and understanding of the science behind food and nutrition and its effects on the human body. There are extensive demonstrations and modelling of processes with a focus on commercial processes.

Term 1	Food Safety, Health and Provenance with a focus on commodity group: Fruit and Vegetables	Term 2	Health and Nutrients with a focus on Potatoes, bread, rice, pasta and other starchy carbohydrates	Term 3	Health and Nutrients with a focus on Dairy and Alternatives	Term 4	Sensory Characteristics of food and processing and preserving methods	Term 5	Appliocation of food groups including Beans, pulses, fish, eggs, meat and other proteins. Along with sugar content in food and drink	Term 6	Food safety and security

Learners develop an understanding of the different food groups, and the science behind them and the effects on consumption. Each stage builds on the last and combines across groups. Previous subjects are retrieved and applied in future topics providing consolidation.

Year 11

2 NEA tasks, one from 1st September - Scientific Investigation (15% of final grade) and one from 1st November (35% of final grade). Theory knowledge culmilating in one examination worth 50% of the course.
Students will have a walking talking mock examination along with industry visits and insider knowledge talks .
NEA tasks will have clearly communicated deadlines to provide focus and pace to quality work

Term 1	Scientific Investigation NEA set on 1st September and practical application	Term 2	Themed NEA set on 1st November and practical application. Revision techniques for extended writing	Term 3	Themed NEA set on 1st November and practical application assessment . Scientific Revision of food groups and their nutritional effects	Term 4	Themed NEA set on 1st November and practical application assessment . Scientific Revision of food groups and their nutritional effects	Term 5	Revision for written examination	Term 6	Year 11 New Knowledge will be complete by 3/3/2025 Year 11 Coursework deadline is 3/3/2025

The NEA tasks follow a process of research, test, produce and make and the course follows this route. This builds on year 10 research and testing. Key written paper knowledge is revisited each week to consolidate learning and allow student to gain confidence for their written examination.