St Dunstan's School
GLASTONBURY

# Design and Technology Curriculum Booklet 2024-25

## Subject Lead: Mrs Potter

## Design and Technology Curriculum Intent

The Design and Technology curriculum at St Dunstan's aims to inspire, engage and enthuse by designing and making products that solve real and relevant problems, allowing students to learn iteratively using up to date technologies and processes, ensuring success for all by raising all students' aspirations to prepare them for career pathways suited to the 21st century.

In providing high quality design and technology education that encourages creativity, breaking down historic gender bias linked to STEM subjects and educating our students in essential knowledge of social, moral, sustainable, environmental and cultural issues along with basic life skills, we are a significant contributor in equipping our students with skills to be healthy, independent, and capable, with empathy for the world and environment around us. Our students are mixed attainers with a thirst for knowledge and a natural inquisitiveness, needing a curriculum that doesn't restrict creativity and gives opportunities to extend learning beyond the classroom. We actively promote STEM careers by exposing them to many career related pathways and to give them a sense of purpose as to the knowledge that they are being taught.

At St Dunstan's we have high expectations of all children, including those with SEND and disadvantaged, to follow the Design and Technology national curriculum in full up to the end of Year 9. In addition, we have designed our projects inline with the national curriculum with our whole school values, to encourage limitless aspirations and self-confidence by building additional knowledge related to business and enterprise skills. These additional employability skills support the students' future pathways, informing understanding and building foundations for the large uptake of NCFE Business and Enterprise at level 2.

Design and Technology also lends itself to raising attainment and a sense of achievement for those students that typically find more traditional academic subjects harder to access; by naturally unpacking the learning by making more use of visual aids and prompts, physical aids, exemplary work and instruction aids. Students build confidence to take this subject further at KS4 and typically go on to make high levels of progress compared to their prior KS2 attainment.

D&T Careers Education: The subject has some links with local industry, raising awareness of careers in design, engineering, business and other STEM related pathways and empowering students at St Dunstan's to be confident to achieve their ambitions, without prejudice, based on their talents and interests.

SMSC knowledge is intrinsic to the Design and Technology curriculum but is also extended at St Dunstan's to encourage a deeper understanding of being a responsible designer and manufacturer. Our students are passionate about areas such as reducing Climate Change and Inclusivity and this is reflected in the type of projects and extra-curricular activities we deliver and the materials and equipment that we use.

## Design and Technology Curriculum Implementation

St Dunstan's has designed a collection of projects at KS3 to improve student and parent understanding of related curriculum pathways at KS4. Using the National Curriculum's KS3 Design and Technology Principles of Study and guidance and training from the Design and Technology Association, our curriculum is based on a five-year generative programme, where knowledge and skills are introduced and built on from Year 7 to Y11 so that students are confident in the broad range of materials and processes needed for GCSE Design and Technology and GCSE Food Preparation and Nutrition.

In KS3, students' study a rotation of Design and Technology lessons. Students' currently have four hours of DT a fortnight in mixed ability classes. The rotations include Food and Nutrition, Textiles and DT/STEM.

In Year 7, 8 & 9 this enables students to experience the following:

**Textiles** **Product Design** **Food and Nutrition**

A significant number of our students arrive at St Dunstan's with limited or no prior KS2 experience in Design and Technology and no experience of the technical equipment and facilities available at St Dunstan's, therefore the first unit in Year 7 for each of the specialisms focuses on health and safety in the respective area. Some of the strands offered at KS3 lead to a formal Level 2 qualification:

Design and Technology (AQA) GCSE is offered with a Product Design focus as it enables students to be able to go on and study A level D&T Product Design. Students are taught in both the workshop and using CAD/CAM, focusing on working with timber, metals and polymers whilst building on the KS3 technical knowledge of a broad range of materials and processes required for the exam. Food and Nutrition knowledge and skills are built up across KS3 to enable students to go on to study GCSE Food Preparation and Nutrition (Eduqas).

In KS3 & 4 Design and Technology we have mixed ability classes which make use of a varied and full range of teaching approaches including creative, practical, written, numeric, working in teams and working on computers, we ensure that all our students feel successful. We give students the ability to be autonomous and have freedom to be creative, we can build confidence and limitless attainment through a natural differentiation process. All students receive regular, individual verbal feedback during most lessons, enabling teachers to get to know their students as individuals in order to support all needs.

Each of the strands include an opportunity to assess work and provide formative feedback during the unit as well as providing a summative grade and feedback at the end of the unit. Each unit assesses in at least two of the following through a range of practical tasks, low stakes knowledge checks and extended writing tasks.

The four areas of assessment are broken down as follows:

**Designing Skills** **Making Skills** **Evaluating Skills** **Technical Knowledge**

At KS4, formal assessments take place approximately five times a year, including a review and feedback on progress made with the NEA style learning and mini tests and knowledge checks to recap exam content.

### Allocated Curriculum Time

| Year Group | Year 7 | Year 8 | Year 9 | Year 10 | Year 11 |
|---|---|---|---|---|---|
| **Fortnightly lesson allocation** | 4 hours | 4 hours | 4 hours | 5 hours for each GCSE. | 5 hours for each GCSE. |

## Curriculum Plan: Year 7

Students rotate three times a year to cover the following areas:

| Curriculum Foci Areas | Assessment Criteria |
|---|---|
| **Design Skills (Mechanical Toy)**<br>● Understanding about types of wood and its impact on the environment.<br>● Designing for a target market group.<br>● Drawing styles - 3D, isometric<br>● Manufacturing high quality and accurate products.<br><br>**Product Design (Key Fob)**<br>● Understanding about polymers and its impact on the environment.<br>● Manufacturing high quality and accurate products.<br>● Developing ideas using CAD/CAM | **Assessment:**<br>● Evaluating an existing product (product analysis)<br>● Designing and making a product<br>● Evaluation of final product.<br>● CAD and hand skills demonstrated to make a product<br>● Knowledge test |
| **Textiles (Bag for Life)**<br>● Health and safety in the textiles room<br>● Introduction to using the sewing machine<br>● Introduction to fabrics and fibres<br>● Hand stitching and techniques<br>● Natural, man-made and synthetic materials | **Assessment:**<br>● Sewing machine driving test<br>● Design ideas<br>● Making<br>● Knowledge test |
| **Food and Nutrition (Healthy Lifestyles)**<br>● Health, safety and hygiene in the kitchen<br>● The 4Cs<br>● Nutrition - the Eatwell Guide<br>● Sustainable eating<br>● The following dishes will be made:<br>○ Fruit salad<br>○ Cereal bars<br>○ Pasta salad<br>○ Fish goujons<br>○ Chicken/Quorn nuggets<br>○ Savoury scones<br>○ Scone based pizza | **Assessment:**<br>● Knife and oven safety practical assessment.<br>● Nutrition presentation.<br>● End of topic test. |

## Curriculum Plan: Year 8

Students rotate four times a year to cover the following areas:

| Curriculum Foci Areas | Assessment Criteria |
|---|---|
| **Design Skills (Hand Held Game)**<br>● Understanding about electronics<br>● Designing for a target market group<br>● Drawing styles - 3D, isometric<br>● Manufacturing high quality and accurate products. | **Assessment:**<br>● Evaluating an existing product (product analysis)<br>● Designing and making a product<br>● CAD and hand skills demonstrated to make a phone holder.<br>● Knowledge test |
| **STEM and Engineering (Bridge Building)**<br>● Will know the difference between market pull and technology push<br>● Modelling and prototyping using the iterative design process and user centred design.<br>● Understanding structures and forces<br>● Will work as part of a team to test, develop solutions to real world design problems - collaborative working. | **Assessment:**<br>● Designing using the Iterative design process<br>● Testing prototypes<br>● Knowledge test |
| **Textiles (Sew to Bed)**<br>● Analyse the work of others through product analysis<br>● Design for a Target Market Group<br>● Pattern drafting, following a pattern<br>● Sewing Machine skills: Joining materials, neatened seams, hemming, constructing a waistband | **Assessment:**<br>● Design ideas<br>● Making of final product<br>● Knowledge test |
| **Food and Nutrition (Special Diets)**<br>● Apply health, safety and food hygiene when working in the kitchen<br>● Identify special diets, reasons for following and understanding their impact on organoleptic qualities and health<br>● Adapt a recipe to meet the needs of an individual who has a specific dietary requirement<br>● Further developing of your practical kitchen skills<br>● Analyse and evaluate food products using sensory descriptors and completing a star profile.<br>● The following dishes will be made:<br>○ Cake experiment<br>○ Vegan curry<br>○ Brownies to suit a special dietary requirement<br>○ Quiche<br>○ Enchiladas<br>○ Own dish design | **Assessment:**<br>● Sensory analysis task<br>● Dish design - making<br>● Knowledge test |

## Curriculum Plan: Year 9

Students rotate four times a year to cover the following areas:

| Curriculum Foci Areas | Assessment Criteria |
|---|---|
| **Food and Nutrition (Sustainability)**<br>● Apply health, safety and food hygiene when working in the kitchen<br>● Identify and understand the big challenges facing our food industry<br>● Identify and understand how to take practical action to become more sustainable<br>● Develop your practical kitchen skills further<br>● Analyse food products using sensory descriptor words, completing a star profile and writing an evaluation .<br>● The following dishes will be made:<br>○ Soup and bread<br>○ Cake making<br>○ Responsible and sustainable cooking<br>○ Rethink meal planning<br>○ Pastry making (dish tbc)<br>○ Sauce making (dish tbc) | **Assessment:**<br>● Extended writing - the moral and ethical issues within the food industry<br>● Making assessment<br>● Knowledge test |
| **STEM and Enterprise Skills (Designing for the Disabled)**<br>● Will show an understanding of how designs are influenced by different needs.<br>● Will know the difference between market pull and technology push.<br>● Modelling and prototyping using the iterative design process and user centred design.<br>● Will understand how to design products for different user groups and different needs.<br>● Will work as part of a team to test, develop solutions to real world design problems. | **Assessment:**<br>● Design and development of a product<br>● Evaluation of prototype |
| **Product Design (Desk Lamp)**<br>● Sustainability in design and the 6 R's<br>● Graphic communication skills<br>● Ergonomics/anthropometrics within product design<br>● Scales of production<br>● Generating design ideas.<br>● Developing accurate practical skills. | **Assessment:**<br>● Design ideas<br>● Making of desk lamp<br>● Knowledge test |
| **Textiles (Wearable Art)**<br>● Analysing the work of others through artist research<br>● Develop a range of practical skills to allow you to produce surface decoration techniques such as; Hand embroidery, machine embroidery, applique, sublimation printing, reverse applique, couching, beading | **Assessment:**<br>● Development of design ideas<br>● Making of final product<br>● Knowledge test |

## Curriculum Plan: Year 10 GCSE Design and Technology (Product Design)
## Exam Board: AQA - Specification: 8550

| Term | Curriculum Foci Areas | Assessment Criteria |
|---|---|---|
| 1 | **Specialist Technical Principles in working with timber**<br>● Theory of timber and boards – characteristics / properties /seasoning and conversion / wood finishes / joining methods<br>● Sustainability of timber – ethical / ecological / life cycle issues /research on deforestation.<br>● Working with wood -chiselling, drilling, forstner bit, planes, laminating, routing, turning | **Assessment**<br>End of term test on Section B style exam questions. (Timber) |
| 2 | **Core Technical Principles**<br>● Core knowledge of quantity production.<br>● Product analysis of electronic products – mobile phone – maintenance issues – built in obsolescence, ecological /social footprint<br>● Core knowledge of polymers / natural plastics, life cycle of polymers<br>● 3D drawing techniques – isometric and exploded<br>● Enterprise – crowd funding / virtual marketing / fairtrade | **Assessment**<br>End of term test on Section A (core technical principles) |
| 3 | **Designing and Making principles:** mini contextual<br>● Identify a user/client/focus group that is relevant to the contextual challenge and undertake a comprehensive investigation of their needs<br>● Show evidence of investigation to support and inform ideas and to write a short design brief and define design specification criteria.<br>● Sketch out a range of initial design ideas that are imaginative, creative and innovative.<br>● Demonstrate evidence of iterative design, through testing, analysis and evaluation of sketches and /or modelling of a prototype.<br>● Students present their idea and obtain evaluative feedback to justify any modifications they would propose for future developments. | **Assessment**<br>Mini NEA style project based on investigating, designing, developing and evaluating skills. |
| 4 | **Core Technical Principles**<br>● Through a series of theoretical lessons students will learn about a broad range of materials covered in Section A of the exam,and their properties: Mechanisms, Papers and Boards**,** Metals and Alloys**,** Textiles **and** Electronics<br>● Practise of maths-based questions. | **Assessment**<br>End of term 4 test on Core Technical principles |
| 5 | **Revision for Mock Exams**<br>● Revision lessons to recap majority of theory for a 2 hour mock exam | **Assessment**<br>full mock exam. |
| 6 | **Non – Examined Assessment (NEA)**<br>● The exam board releases three design contexts provided by the exam board on 1st June for their actual NEA. Students can choose one in order to start their NEA final project, worth 50% of the GCSE.<br>● Through term 6 and the summer holidays students spend their time investigating their chosen design context, design brief and specification. | **Assessment**<br>A01 – Investigating the Design Context |

## Curriculum Plan: Year 11 GCSE Design and Technology (Product Design)

## Exam Board: AQA - Specification: 8550

Following on from starting their NEA final project in term 6 of Y10, students continue with their NEA design development at the start of Year 11. This requires considerable commitment to regularly completing pages of project work at home and time spent in the workshop outside of lesson time to meet the March deadline.

| Term | Curriculum Foci Areas | Assessment Criteria |
|---|---|---|
| 1 | **Non- examined-assessment (NEA)**<br>● Generating and developing design ideas for the NEA final project.<br>● Students present their initial design ideas to the class and evaluate them, going on to produce further ideas that show experimentation and clear communication, using a wide range of techniques and design strategies for different purposes. | **Formal Non-Examined GCSE Assessment:**<br>A01– Investigating chosen design context, Design Brief, Specification (20 marks) = End of September<br>A02 C – Generating design ideas (20 marks) = End of October |
| 2 | **Non- examined-assessment (NEA)**<br>● Realising design ideas and creating a final prototype<br>● Students are to carry out detailed development work using a wide range of 2D and 3D techniques, including CAD where appropriate, in order to develop a prototype.<br>● Students need to demonstrate they can select the correct tools, materials and equipment, (including CAM where appropriate, and use them consistently safely and with a high level of skill.<br>● Students need to ensure the prototype is made accurately by consistently applying quality control checks to very close tolerances. | **Formal Non-Examined GCSE Assessment:**<br>A02 D – Developing design ideas (20 marks) = End of November |
| 3 | **Mock Exam Revision**<br>● Recap of knowledge covered in Year 10 for Section A, Section B and Section C of the exam paper<br>● Demonstrate and apply knowledge and understanding of:<br>○ Core Technical principles<br>○ Specialist Technical principles<br>○ Designing and Making principles. | **Formal Non-Examined GCSE Assessment:**<br>AO4 – full mock exam =Start of Term 3<br>A02 E – Realising Design Ideas (20 marks) = End of February |
| 4 | **Non- examined-assessment (NEA)**<br>● Finalising a final, functioning prototype,testing and evaluating it.<br>● Students need to complete comprehensive testing of all aspects of the final prototype against the design brief and specification. They need to justify any modifications they have made or would propose for future developments. | **Formal Non-Examined GCSE Assessment:**<br>AO3 – analysing and evaluating plus full NEA marking = Mid March |
| 5 | **Revision and Exams** | |

## GCSE Design & Technology: Product Design Final Assessment Structure:

| Component | Weighting | Content | Proposed Date of Examination |
|---|---|---|---|
| **Written Exam (2 hrs)** | 50% of GCSE<br><br>100 marks total<br>Section A = 20 marks<br>Section B = 30 marks<br>Section C = 50 marks | **Exam:**<br>The exam paper consists of three sections:<br>● Section A is multiple choice and assesses core content of Design and Technology GCSE across all material areas.<br>● Section B is on Specialist Technical Principles in timber.<br>● Section C assesses Designing and Making Principles without focusing on a material specialism.<br>● Across sections A, B and C it will include 10 marks of applied maths questions at KS3 maths level. | May/June (year 11) |
| **Non-Exam Assessment (NEA)** | 50 % of GCSE<br><br>100 marks total<br>Portfolio and product will be internally assessed by subject teachers and externally moderated.<br>The marks are awarded for each part as follows.<br>Investigate (20 marks)<br>Design Development (40 marks)<br>Making final Product (20 marks)<br>Evaluate (20 marks) | **Non-exam Assessment (NEA)**<br>Students will undertake an individual, personal project based on a contextual challenge provided by AQA. They will complete a portfolio folder of approximately twenty A3 pages and make a high quality final prototype. The project will test students' skills in-<br>● Investigating<br>● Design development<br>● Making<br>● Evaluating | Submission - May (year 11) |

Please see exam board websites for up to date information:

https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/specification-at-a-glance

## Year 10: GCSE Food Preparation and Nutrition
## Exam Board: Eduqas

| Term | Curriculum Foci Areas | Assessment Task |
|---|---|---|
| 1 | **Principles of nutrition, diet and good health**<br>● Micro and macronutrients (the function and source)<br>● The role of the Eatwell Guide.<br>● Government guidelines.<br>● Energy requirements of specific target groups<br>● Diet related illnesses.<br>● Menu planning. | **Assessment**<br>End of unit test - exam questions. |
| 2 | **Food provenance and where food comes from**<br>● Food origins, including where and how foods are grown, reared, or caught.<br>● Food miles, impact on the carbon footprint, buying foods locally<br>● Impact of packaging on the environment versus the value of packaging.<br>● Sustainability of food: the impact of food waste on the environment.<br>● Food security: access to safe sufficient food for all<br>● How processing affects the sensory and nutritional properties of food<br>● Food wastage: the effect on the environment and the financial implications | **Assessment**<br>Extended writing assessment. |
| 3 | **Food science**<br>● Why food is cooked, to include digestion, taste, texture, appearance and to avoid food contamination.<br>● How heat is transferred to food through conduction, convection and radiation.<br>● The positive use of microorganisms such as bacteria in dairy products.<br>● The working characteristics, functional and chemical properties of ingredients to achieve a particular result | **Assessment**<br>Mini NEA style project based on the chemical and functional properties of food |
| 4 | **Food spoilage**<br>● How to store foods correctly<br>● The importance of date-marks, labelling of food products<br>● The growth conditions, ways of prevention and control methods for enzyme action, mould growth and yeast production.<br>● The signs of food spoilage<br>● The role of temperature, pH, moisture and time in the control of bacteria.<br>● The types of bacterial cross-contamination and their prevention.<br>● How to avoid food poisoning | **Assessment**<br>End of unit test - exam questions. |
| 5 | **Commodities**<br>● The range of foods and ingredients to be studied throughout the course should come from the major commodity groups<br>● The value of the commodity within the diet. | **Assessment**<br>Practical assessment - meal |

| | | |
|---|---|---|
| | ● Features and characteristics of each commodity with reference to their correct storage to avoid food contamination<br>● The working characteristics of each commodity | planning and adaptation. |
| **6** | **Factors affecting food choice**<br>● How sensory perception guides the choices that people make, how taste receptors and olfactory systems work.<br>● The sensory qualities of a range of foods and combinations.<br>● The range of factors that influence food choices.<br>● The choices that people make about certain foods according to religion, culture, ethical belief, medical reasons or personal choices.<br>● How to make informed choices about food and drink.<br>● How information about food is available to the consumer, including food labelling and marketing and how this influences food choice. | **Assessment**<br>Full mock exam. |

## Year 11: GCSE Food Preparation and Nutrition
## Exam Board: Eduqas

Students will complete NEA 1 and NEA 2 in year 11, this requires considerable commitment to completing portfolio work.

| Term | Curriculum Foci Areas | Assessment Task |
|---|---|---|
| **1** | **Non- examined-assessment 1 (NEA 1) - 15%**<br>Food Investigation will be set that will require each learner to:<br>● Research and plan the task<br>The NEA will require learners to produce a report which evidences all of the above and includes photographs and/or visual recordings to support the investigation. | **Formal NEA assessment:**<br>Section A |
| **2** | **Non- examined-assessment 1 (NEA 1) - 15%**<br>Food Investigation will be set that will require each learner to:<br>● Investigate the working characteristics, function and chemical properties of ingredients through practical experimentation and use the findings to achieve a particular result<br>● Analyse and evaluate the task<br>The NEA will require learners to produce a report which evidences all of the above and includes photographs and/or visual recordings to support the investigation:<br>● Revision for mock exam<br>● Upskilling tasks | **Formal NEA assessment:**<br>Section B & C<br><br>November mock exam |
| **3** | **Non- examined-assessment 2 (NEA 2) - 35%**<br>This assessment will require learners to plan, prepare, cook and present a selection of dishes, to meet particular requirements such as a dietary need, lifestyle choice or specific context.<br>Two options for this assessment will be set by Eduqas that will require the learners to:<br>● Investigate and plan the task, select a final menu to be produced to showcase skills and produce a plan of action for the practical execution of the dishes (to include trialling and testing). | **Formal NEA assessment:**<br>Section A |
| **4** | **Non- examined-assessment 2 (NEA 2) - 35%**<br>This assessment will require learners to plan, prepare, cook and present a selection of dishes, to meet particular requirements such as a dietary need, lifestyle choice or specific context.<br>● Prepare, cook and present a menu of three dishes within a single session. (c) evaluate the selection, preparation, cooking and presentation of the three dishes.<br>● Produce a folio of evidence which includes documentation related to the selection of dishes, planning and evaluation and photographs and/or visual recordings which demonstrate the learner's application of technical skills and the final outcomes. | **Formal NEA assessment:**<br>Section B & C |
| **5** | **Revision and Exams** | |

## GCSE Food Preparation and Nutrition: Final Assessment Structure:

| Component | Weighting | Content | Proposed Date of Examination |
|---|---|---|---|
| **Written Exam (1 hour 45 minutes)** | 50% of GCSE | **Exam:**<br>The exam paper will consist of two sections both containing compulsory questions and will assess the six areas of content as listed in the specified GCSE content.<br>● Section A: questions based on stimulus material.<br>● Section B: structured, short and extended response questions to assess content related to food preparation and nutrition. | June (year 11) |
| **Non-Exam Assessment (NEA)** | 50 % of GCSE<br><br>NEA 1, 15% - September (year 11)<br><br>NEA 2, 35% - January (year 11) | **Non-exam Assessment (NEA)**<br><u>Assessment 1: The Food Investigation Assessment</u><br>● A scientific food investigation which will assess the learner's knowledge, skills and understanding in relation to scientific principles underlying the preparation and cooking of food.<br><br><u>Assessment 2: The Food Preparation Assessment</u><br>● Prepare, cook and present a menu which assesses the learner's knowledge, skills and understanding in relation to the planning, preparation, cooking and presentation of food. | Submission - May (year 11) |

Please see exam board websites for up to date information:
https://www.eduqas.co.uk/qualifications/food-preparation-and-nutrition-gcse/#tab_keydocuments