DESIGN TECHNOLOGY

DESIGN AND TECHNOLOGY PROGRESSION PATHWAY AT OUTWOOD GRANGE ACADEMY

Study Design and Technology in years 7, 8 and 9, they receive 2 hours a week in year 7 and one hour a week in year 8 and 9. Within each year they study Product Design, Food Technology and Textiles, each subject is visited twice throughout the year in roughly 6 week rotations. Students may wish to continue with their studies in Design and Technology and can choose from GCSE Product Design, WJEC Technical award in Hospitality and Catering or GCSE Art and Design Textiles. Details on these courses can be found on our website.

Design and Technology at KS3

	Year 7	Year 8	Year 9
Product Design	*Rotation 1 - Block bot* Students will learn: • How to work in DT workshop • What is the source of woods • What are softwoods • Types of tool • Safe use of a tenon saw • Safe use of a coping saw • Safe use of the pillar drill • Safe use of a band facer • Safe use of common abrasive tools • Correct use of finishing waxes *Rotation 2 - CAD/CAM Key ring* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn:	*Rotation 1 - 3D printer project* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • Drawing in sketchup, • Using groups and components, • How to check for errors, • How to export files • Opening designs in makerbot • Setting up and using the 3D Printer. *Rotation 2 - Bottle opener* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • 3rd angle orthographic drawing	*Rotation 1 and 2 - Memphis light* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • Transferring files to the laser cutter • How to laser cut • Types of plastics • Common electronic components • How to tin and solder

	• What CAD is. • What CAM is • What rapid prototyping is • How to use a laser cutter • What polymers are	• Working to a drawing • How to mark metals • How to shape metals • How to drill into metals • What are common measuring devices in Engineering	
Food Technology	*Rotation 1 - Introduction to Food Technology* Students will learn: • How to work in a food room • How to use weighing scales • Safe use of knives • Safe use of hob • Safe use of oven • What is the Eatwell Guide • Main nutrients and their functions • 8 guidelines for healthy eating • Why certain ingredients are used *Rotation 2 - Food Handling* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • How to show accuracy within dishes • Seasonality - advantages and foods • How to control temperature when using the hob • Cross contamination	*Rotation 1 - Cooking for Home* In addition to continuing to develop a deeper understanding of new learning from previous rotations, students will also learn: • Further investigation into the main nutrients and their functions • Vitamins and their functions • How to show accuracy within dishes • Safe use of a variety of hand tools *Rotation 2 - Healthy Living for All* In this rotation students will continue to embed the learning from rotation one, as well as continuing to develop a deeper understanding from previous rotations. Therefore students will continue to learn: • Further investigation into the main nutrients and their functions • Vitamins and their functions • How to show accuracy within dishes • Safe use of a variety of hand tools	*Rotation 1 - Fake away (Part 1)* In addition to continuing to develop a deeper understanding of new learning from previous rotations, students will also learn: • How to handle food safely • EHO responsibilities • How to cost a recipe • Comparison of ready meals/fresh *Rotation 2 - Fake away (Part 2)* In this rotation students will continue to embed the learning from rotation one, as well as continuing to develop a deeper understanding from previous rotations. Therefore students will continue to learn: • How to handle food safely • EHO responsibilities • How to cost a recipe • Comparison of ready meals/fresh

Textiles	*Rotation 1 - Bean Bag Games* Students will learn: • Threading the machine • Changing a foot • Spinning a spool • Different stitch types • Pinning fabrics for sewing • Tesselation of shapes • Common marking out tools in Textiles *Rotation 2 - Donuts* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • How to applique • How to create a running stitch • How to create a back stitch • How to create a whip stitch • How to create French knots • Cutting from a pattern • Marking out Textiles	*Rotation 1 - Bunting (Decorative techniques)* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • How to work in a textiles workshop. • How to measure dyes. • How to mix dyes. • How to create a stencil. • How to create abstract patterns. • What Tie dyeing is • What Stencilling is • What Marbling is • What Mark making is *Rotation 2 - Bunting (Construction techniques)* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • How to create templates • How to cut fabrics • What seam allowance is • What pattern matching is • How to pin • How to iron fabrics	*Rotation 1 and 2 - Bucket hat* In addition to continuing to develop a deeper understanding of new learning from the previous rotation, students will also learn: • How to construct products using patterns • How design techniques used in the fashion industry • How to Develop a fashion based product • Where inspiration can come from for fashion based items • More advanced machining techniques
Design and Technology at KS4			
	Year 10	**Year 11**	
Product Design	*Term 1* In term one students will learn about, woods and plastics, and complete projects using CAD CAM. They will also complete projects using traditional	*Term 1* In term one student will continue with their work on their NEA.	

	construction techniques <u>Term 2</u> In term two students will focus on papers, boards, mechanical devices and metals, and complete projects using CAD CAM. They will also complete projects using traditional <u>Term 3</u> Students will look at developing a project using what they have learnt in terms 1 and 2. They will then start their NEA. The brief is assigned by the exam board.	<u>Term 2</u> Students will learn about exam techniques and practice retrieving knowledge from all units of the course. <u>Term 3</u> In term three students will continue with their revision and exam preparation.
Hospitality and Catering	*<u>Term 1</u>* In term one students will develop a range of practical skills. Alongside this they will learn about food hygiene and legislation along with looking at the wider Hospitality industry. They will also cover healthy eating principles and the benefits to different life stages. <u>Term 2</u> In term two students will continue to develop a range of practical skills, ensuring they work to a time plan, understanding contingencies and quality points. In this term there will be a focus on menu planning and factors that influence the choices made when planning a menu. <u>Term 3</u> In term three students will continue to develop a range of practical skills. They will then be given the opportunity to use the knowledge and skills developed in terms one and two to undertake a mock NEA.	*<u>Term 1</u>* In term one students will conduct their NEA. Alongside this they will continue to explore different practical skills which are deemed to be of a high skill level. <u>Term 2</u> Students will learn about roles and responsibilities in the Hospitality and Catering sector. As well as an in depth look into causes of ill health and the symptoms of these. <u>Term 3</u> In term three students will continue with their revision and exam preparation.
Textiles	*<u>Term 1</u>* In term one students will conduct a structured and layers project. Within this	*<u>Term 1</u>* Students will conduct a student lead project, where they will use knowledge and

	project they will conduct research, study different artists, and develop a range of Textile techniques. <u>Term 2</u> In term two students will continue with this project and develop a Textiles based product linking to their research in term one. <u>Term 3</u> In term three students will explore Textiles and the fashion industry. Within this unit they will look at garment construction and fashion illustration, as well as looking at the fashion industry as a whole.	understanding from the first year's study to create a meaningful final piece. <u>Term 2</u> In term two students will start their exam, the brief is determined by the exam board. <u>Term 3</u> In term three students will complete their exam.

Why is the study of Design and Technology important?

Design and Technology is a practical and valuable subject. It enables you to actively contribute to the creativity, culture, wealth and well-being of yourself, your community and your nation. It teaches you how to take risks and so become more resourceful, innovative, enterprising and capable. You will develop a critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for you to develop and apply value judgments of an aesthetic, economic, moral, social, and technical nature both in your own designing and when evaluating the work of others.

What skills will the study of Design and Technology teach you?

Design and Technology applies knowledge, skills and understanding from within the subject itself, and also a wide range of other sources such as science and mathematics. Design and Technology will teach you to:

- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- Be creative in developing solutions to real world problems.

- Use modelling and annotated sketches to develop and communicate ideas.
- How to act responsibly within a practical environment thinking of the safety of yourself and others.
- Identify how to competently use a range of practical techniques across a range of disciplines.
- Apply and use CAD/CAM equipment to design and manufacture a range of products /components considering scale of production and precision.
- Work independently and part of a team to solve complex problems.
- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these effectively.
- Identify links between different materials and contextual references.
- Test, evaluate and refine ideas and products against a specification, taking into account the views of intended users and other interested groups.
- Understand and apply the principles of nutrition and health.
- Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet.
- Become competent in a range of cooking techniques e.g. selecting and preparing ingredients: using utensils and equipment, applying heat in different ways: awareness of taste, texture and smell to decide how to season dishes and combine ingredients, adapting and using their recipes.
- Understand the source, seasonality and characteristics of a broad range of ingredients

What will you know and understand from your study of Design and Technology?

- How to classify materials and discuss their physical properties.
- How to use simple electronic circuits incorporating inputs and outputs.
- How to manufacture products with reference to their materials physical properties.
- How to use and adjust equipment and machinery depending on the task.
- Use learning from science and mathematics to help design and manufacture components and products.
- To consider the influence of a range of lifestyle factors and consumer choices when designing and analysing products.
- To know and understand additional factors to consider such as ergonomics, anthropometrics or dietary needs.
- To use a variety of approaches, for example biomimicry and user-centred design to generate creative ideas and avoid stereotypical responses.
- To evaluate their work against an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their product to their own designing and making.
- To competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment.
- The principles of nutrition and health including energy, nutrients, water, fibre, diet and health and nutritional needs throughout life and the risks of an unbalanced diet.
- A repertoire of predominantly savoury dishes in line with the principles of the eatwell guide.
- To feed oneself taking into account personal preference, socio-economic aspects, nutritional and health needs.
- Healthy and varied diets as depicted in the eat-well plate and 8 tips for healthy eating.
- To explore the origin of food products and ingredients.
- To consider how seasons may affect the food available.

- To consider the function, nutrient profile and sensory attributes of ingredients.
- To study a range of food commodities eg. cereals, fruits, vegetables, meat, fish, eggs, fats/oils, milk dairy food products.
- To develop a range of preparation, cooking and presentation skills.
- To plan menus for a range of individual and nutritional needs.
- To prepare and cook safely to prevent food poisoning.

How does your study of Design Technology support your study in other subjects?

Design Technology develops a number of skills that will support your study of other subjects, as so many of the skills you will acquire in Design Technology are transferable. Design Technology disciplines will develop your focus, resilience, self-expression, teamwork, mathematical skills and problem solving and communication skills, which will help you in **all** of your other subjects. It will give you an opportunity for creative expression and practical thinking and encourage you to think about how to improve and hone designs and encourage healthy eating etc. Some students may take this even further and discover a subject that provides them with a life-long hobby or career that enhances their life for years to come. All students will gain an understanding of healthy diets etc. The ability to think creatively and problem solve are crucial in Engineering, Mathematics and Science. It will foster an interest and skill in cooking and may lead to study of subjects such as catering etc.

How can you deepen your understanding of Design Technology?

To enhance your work in lessons, there will be times when we explore the professional workplace and wider design practices and materials. This will deepen your understanding of professional work and introduce you to new techniques and ideas.

You will also have the opportunity to deepen your understanding of Design Technology disciplines through extracurricular opportunities, where you can continue to develop your creative ideas, or work on specific design projects. During enrichment clubs, you will have the opportunity to meet design and technology enthusiasts from other year groups, during the sessions you will have access to the latest technologies, 3D printers, laser cutters, sublimation printers etc to ensure your work is accurate and to also further develop your design and practical skills.

There may also be an opportunity to participate in trips to London, universities such as the Northern School of Art to complete workshops, The Hepworth Gallery to complete primary research, as well as exhibiting your own work within the Academy. Occasionally, there will be opportunities to enter national competitions to gain additional audiences and recognition for your work such as Rotary Tournament Challenge and Wakefield College's Cross Schools Cookery Competition.

How can Design Technology support your future?

We offer the study of GCSE and A Level and we encourage your continued study in this fantastic subject. Yet we know that choice and personal interest are important aspects of worthy study. Whether you have continued your study of a discipline of Design Technology into GCSE or A level or not you will have gained access to this wide enriching subject and its study of the various disciplines will have taught you to think differently and deeply.

Design courses are offered at most prestigious universities and there are many technical and vocational qualifications that can be studied in engineering, product design, graphics, electronics, catering, nutrition etc as well as routes into apprenticeships etc. The very fact that you have been able to study creative thinking, problem solving, planning and design principles will help your future application be they for colleges, universities, apprenticeships or employment.

Careers linked to Design Technology:

- Product Designer
- Civil engineer
- Quantity Surveyor
- Graphic Designer
- Fashion Designer
- Branding designer
- Software Engineer
- Catering
- Nutritionist
- Food technologist
- Manufacturing Engineer / manager
- Architect
- Construction
- Aerospace engineer

The list is endless as study of Design Technology opens up a world of opportunities.