



DESIGN TECHNOLOGY

Design Technology

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.

The subject at Outwood Academy Ormesby is split up into the following categories:

- **Food Technology Health and Wellbeing:** Design recipes and create food products while learning about nutrition, This is taught through the schools Health and Wellbeing Curriculum
- **Textiles technology:** Design and make products using fibres and fabrics
- **Resistant materials technology & Graphic Design:** Work with materials like metals, plastic, wood, card and paper and use them to make interesting products

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 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 evaluate products through disassembly to determine how they are constructed and function and consider the life cycle analysis
- 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 and product 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
- To explore the effect of advertising, marketing and packaging on food choice

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 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 food enthusiasts from other year groups, where you can share ideas, critique each other's work and continue to develop your technique.

There may also be an opportunity to participate in trips as well as exhibiting your own work within the Academy. Occasionally, there will be opportunities to enter national or Trust competitions to gain additional audiences and recognition for your work.

How are you assessed in Design Technology?

In Design Technology you are assessed using the following assessment objectives which ensure that you can cumulatively build your subject understanding in preparation for future GCSE and A Level study. There are regular assessment points each year that we term Praising Stars©. In the lower years before certificated study we assess how students are performing against age related expectation and as students' progress on to Level 2 qualifications such as Hospitality and Catering, Three Dimensional Design & Textiles Design we assess how their current stage of study reflects how they are on track to reach their end of KS4 targets which are formulated on aspirational expectation from their KS2 starting points. For both lower and upper years we make an informed judgement from our holistic assessments based on our subject mapping of expectation across the Design Technology curriculum.

Assessment Objectives Design and Technology

KS4 Hospitality & Catering	Unit 1 Assessment Objective 1: Understand the environment in which hospitality and catering providers operate Assessment Objective 2: Understand how hospitality and catering provisions operate Assessment Objective 3: Understand how hospitality and catering provision meets health and safety requirements Assessment Objective 4: Know how food can cause ill health Assessment Objective 5: Be able to propose a hospitality and catering provision to meet specific requirements Unit 2 Assessment Objective 1: Understand the importance of nutrition when planning menus Assessment Objective 2: Understand menu planning Assessment Objective 3: Be able to cook dishes
KS4 3D Design	Unit 1 and 2 Assessment Objective 1: Develop ideas through investigations, demonstrating critical understanding of sources Assessment Objective 2: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes Assessment Objective 3: Record ideas, observations and insights relevant to intentions as work progresses

	<p>Assessment Objective 4: Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.</p> <p>Students will work on two projects to meet these assessment objectives which will account for 60% of their GCSE grade. Theme Park Design Lamps and Lighting</p> <p>The other 40% will be an externally set task in which students will be required to produce a portfolio of work and a final piece in a 10 hour practical exam.</p>
KS4 Textile Design	<p>Unit 1 and 2</p> <p>Assessment Objective 1: Develop ideas through investigations, demonstrating critical understanding of sources</p> <p>Assessment Objective 2: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes</p> <p>Assessment Objective 3: Record ideas, observations and insights relevant to intentions as work progresses</p> <p>Assessment Objective 4: Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language</p> <p>Students will work on two projects to meet these assessment objectives Cultural Fabric Dolls Seasonal Accessories</p> <p>The other 40% will be an externally set task in which students will be required to produce a portfolio of work and a final piece in a 10 hour practical exam.</p>

	Design	Make	Evaluate	Technical Knowledge
KS3	<p>Use research and begin to explore, such as the study of different cultures, to identify and begin to understand user needs.</p> <p>To identify and solve issues within a design development task.</p> <p>Develop specifications to inform the design of innovative, functional, appealing products that</p>	<p>Select from a wider, more complex range of materials and components, taking into account their properties.</p> <p>Make simple use of planning tools for instance Gantt charts, communicate their plans clearly so that others can implement them.</p> <p>Use a broad range of material joining techniques including stitching, mechanical</p>	<p>Select appropriate methods to evaluate their products in use and modify them to improve performance.</p> <p>Produce short reports making suggestions for improvements.</p> <p>Evaluate products that they are less familiar with using themselves.</p> <p>Evaluate products considering life cycle analysis.</p>	<p>How to apply computing and use electronics to embed intelligence in products that respond to inputs.</p> <p>How to control outputs such as actuators and motors.</p> <p>How to use software and hardware to develop programmes and transfer these programmable components for example, microcontrollers.</p> <p>How to make use of microcontrollers in products they</p>

<p>Year 7</p>	<p>respond to needs in a variety of uses.</p> <p>Use a variety of influences, to generate creative ideas and avoid stereotypical responses.</p> <p>Use 2D and 3D to model and develop their ideas.</p> <p>Use CAD software to validate their designs in advance of manufacture.</p> <p>Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools.</p>	<p>fastenings, heat processes and adhesives.</p> <p>Make independent choices when selecting and using CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality.</p> <p>Follow procedures for safety and understand the process of risk assessments.</p> <p>Make independent choices when selecting and using a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely.</p>	<p>Evaluate how products can be developed considering the concept of cradle to grave.</p> <p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Evaluate new and emerging technologies.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.</p> <p>Evaluate their products against their original specification and identify ways to improve them.</p>	<p>design and manufacture themselves.</p> <p>How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p> <p>Understand the properties of materials, including smart materials, and how they can be used to advantage.</p> <p>How to classify materials by structure e.g hard woods, soft wood, ferrous and non-ferrous, thermoplastics and thermosetting plastics.</p> <p>Consider the physical properties of materials. E.g brittleness malleability.</p>
----------------------	--	--	---	---

	<p>Consider additional factors such as ergonomics and anthropometrics.</p> <p>Use research, such as the study of different cultures, to identify user needs.</p> <p>Be able to outline a simple specification to inform design ideas and guide their thinking.</p> <p>Use 2D packages to model their ideas.</p> <p>Produce models of their ideas using CAM to test ideas.</p> <p>Be able to independently generate creative ideas informed by stimulus using annotations to explain key features relating to brief/specification.</p>	<p>Apply a range of finishing techniques to a broad range of materials.</p> <p>Produce ordered sequences and schedules for manufacturing products they design detailing resources required.</p> <p>Make use of specialist equipment to mark out materials.</p> <p>Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives.</p> <p>Select and use CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality.</p>	<p>Actively involve others in the testing of their products.</p> <p>Evaluate products through disassembly to determine how they are constructed and function.</p> <p>Evaluate the positive and negative impact that products can have in the wider world.</p> <p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Evaluate new and emerging technologies.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their</p>	<p>How to use simple electronic circuits incorporating inputs and outputs.</p> <p>Consider textile fibre sources eg. natural and synthetic.</p> <p>How materials can be cast in moulds.</p> <p>Make use of sensors to detect heat, light etc such as thermistors and light dependent resistors.</p> <p>How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p>
--	---	---	--	---

	<p>Consider additional factors such as ergonomics and anthropometrics.</p>	<p>Investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials.</p> <p>Follow procedures for safety and understand the process of risk assessments.</p> <p>Select and use a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely.</p> <p>Apply a range of finishing techniques to a broad range of materials.</p>	<p>products to their own designing and making.</p>	<p>Understand the properties of materials, including smart materials, and how they can be used to advantage.</p>
--	--	--	--	--

National Curriculum in Cooking and nutrition

The National Curriculum for cooking and nutrition is currently taught through the schools Health and Wellbeing curriculum which covers the following:

As part of their work with food, pupils are taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to: Understand and apply the principles of nutrition and health to be able to cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet. Pupils will aim to become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes understand the source, seasonality and characteristics of a broad range of ingredients.

How can Design Technology support your future?

Of course, we offer the study of Level two Design and Technology qualifications 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 to study 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
- Prop maker
- TV and Film Set Designer
- Catering
- Nutritionist
- Food technologist
- Manufacturing Engineer / manager
- Architect
- Construction
- Aerospace engineer
- Fashion Illustrator
- Visual Merchandiser

- Costume Designer
- Personal Shopper
- Interior Designer
- Chef

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

DESIGN TECHNOLOGY CURRICULUM PROGRESSION OVERVIEW OUTWOOD ACADEMY ORMESBY

Students will have one hour of D&T a week which will be split over the different subject areas of D&T throughout the year to ensure a broad curriculum is achieved where the key focus is learning about core materials and materials. Students operate on a carousel system throughout the academic year

	YEAR 7	YEAR 8	Year 9
Resistant Materials	<p>Wind Chime</p> <p>In year 7 we will introduce the students to Design Technology and health and safety in the workshop. The project gives the students the opportunity to use the workshop machines and a range of workshop tools such as the belt sander, pillar drill, tenon</p>	<p>TV/Film Miniature Set Model</p> <p>The focus of this project is to introduce students to different types of resistant material. The students can work in woods, papers, plastics and metals depending on the design choices they make. The Students will get the experience of designing, making and problem solving for a brief within the TV, Film and Entertainment industry. They also get the opportunity to develop their</p>	<p>Myths and Monsters</p> <p>Students are asked to develop a concept for a new TV show of Film Production based around their choice of a Myth or Monster.</p> <p>Students will build upon the skills they have learnt in year 7 and 8 and apply them to a range of 3d models reflecting their chosen myth or monster. They will also be creating an A4 sized portfolio showing their design and make process.</p>

	<p>saw, coping saw and a number of marking out tools.</p> <p>Knowledge covers the work of other designers. Health and safety in a workshop including risk assessments. Students will work with a range of Plastics, Woods and Metals.</p>	<p>designing skills by producing designs for their model around a given theme.</p> <p>Knowledge covers the mathematics of working to scale. They will also look at existing model sets and analyse the products and look at the pros and cons.</p>	
<p>Textiles Technolog y</p>	<p>Fabric Phone Holder</p> <p>In year 7 students will be learning how to apply a working knowledge of textiles techniques and processes such as dying fabric, printing on to fabric and stitching into fabric using hand sewing and the machine.</p> <p>Students will learn how to create a 3d shape using a range of fabric and fibres.</p> <p>Students will learn about the needs and wants of the consumer who</p>	<p>Seven Deadly Sins Hats</p> <p>This project is to give our students the experience of working on a professional design brief. Students are given the design task to design and make a fleece beanie hat based around one of the Seven Deadly Sins.</p> <p>This Design task, with a primarily fashion focus will allow students to consider the social and moral issues of creating a product around the theme of the Seven Deadly Sins and design and make a product suitable for a wide range of consumers.</p>	<p>Festival Attire</p> <p>Students in year 9 will be given the design brief to create textile products suitable to be sold at a music festival.</p> <p>The aim of this project will be to build students' textiles skills and knowledge.</p> <p>Students will be given a choice on what textile product they want to make and will be asked to create a portfolio that shows their design and development work.</p> <p>This project allows students to consider the environmental impact the textile industry has on our environment and how we can use recycled materials to minimise the impact but still create quality products.</p>

	<p>would purchase a mobile phone holder and how best to meet these through designing and making a prototype product.</p> <p>This will enable students to design and create a functional product that will hold a mobile phone.</p>	<p>Students will learn how to build upon the skills learned in textiles in year 7 and apply them to a new product in year 8 as well as learn how to draft their own paper pattern to meet their design requirements.</p> <p>Students will develop their skills using the sewing machine to be able to sew both straight and curved seams and apply techniques such as applique and reverse applique.</p>	
--	--	--	--

Please note the planned curriculum is subject to change due to classroom logistics and class rotations.

