SUBJECT & QUALIFICATION: Design & Technology (Resistant Materials & Textiles)

Why is the study of Design & Technology important?

Design and Technology is a practical and valuable subject. It enables you to actively contribute to the creativity, culture, health 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.

At Outwood Academy Normanby the subject is split up into the following categories:

- **Hospitality and Catering:** Learning about making healthy choices through the Health andWellbeing Programme whilst learning key practical skills.

- **Design and Technology:** Learning about materials such as metals, plastics and woods and how to use them to make interesting products. Follow a design process to research, design, develop, make and evaluate. Learn how to use 2D and 3D modelling programs to plan and design products.

- **Textiles Design:** Learning about materials such as natural and synthetic fibres and how to use them to make interesting products. Follow a design process to research, design, develop, make and evaluate. Learn how to plan and model products using 2D and 3D modelling programs and modelling fabrics to plan and design products.

What skills will the study of Design & 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:

Curriculum Progression Pathway

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- 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.

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

- How to manufacture products with reference to their materials physical properties.
- How to classify materials and discuss their 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.

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 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 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. 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. The ability to think creatively and problem solve are crucial in Engineering, Mathematics and Science.

How are you assessed in Design & Technology?

Throughout your five years in Design Technology you will be assessed using the following assessment objectives which ensure that you can cumulatively build your subject understanding in preparation for future study both in and after academy life. There are six 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 1 and 2 courses such as GCSE and Vocational courses we assess how their current stage of study reflects how they are on track to reach their end of Key Stage 4 targets which are formulated on aspirational expectation from their Key Stage 2 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.

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Non-Exam Assessment (NEA) - 50% of GCSE	
How it's assessed	• Non-exam assessment (NEA): 30–35 hours approx • 100 marks • 50% of GCSE

Assessment criteria:
-Identifying and investigating design possibilities
- Producing a design brief and specification
- Generating design ideas
- Developing design ideas
- Realising design ideas
- Analysing & evaluating

Paper 1- 50% of GCSE

Section A – Core technical principles (20 marks) A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.

Section B – Specialist technical principles (30 marks) Several short answer questions (2–5 marks) and one extended response to assess a more in depth knowledge of technical principles.

Section C – Designing and making principles (50 marks) A mixture of short answer and extended response questions.

Key Assessment Objectives

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The key learning objectives for Design & Technology are:
AO1: Identify, investigate and outline design possibilities to address needs and wants.
AO2: Design and make prototypes that are fit for purpose.
AO3: Analyse and evaluate: • design decisions and outcomes, including for prototypes made by themselves and others • wider issues in design and technology.
AO4: Demonstrate and apply knowledge and understanding of: • technical principles • designing and making principles.

Coursework requirements.
The Non-exam assessment will contribute towards 50% of the students overall mark. The NEA project in its entirety should take between 30-35 hours to complete and consist of a working prototype and a concise portfolio of approximately 20 pages of A3 paper, equivalent A4 paper or the digital equivalent.

How can Design & Technology support your future?
We offer the study of GCSE courses 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 continue to study a discipline of Design Technology into further education 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 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.

Study of Design & Technology can lead to a wide range of careers:		
• Product Designer • Civil engineer • Quantity Surveyor • Graphic Designer • Fashion Designer • Software Engineer	• Manufacturing Engineer/manager • Architect • Construction • Animator • Game designer • Aerospace engineer	• Illustrator • Web design • Town planning • Teaching • Jeweller • Prop maker

Design & Technology GCSE Course Overview		
Term	Year 1	Year 2
Autumn 1	**Project Work** **- Tea-light Holder (Resistant Materials)** A first project to consolidate prior learned skills to produce a high quality, well finished and commercially viable product. **- Coasters (Textiles)** A full CAD/CAM project to create a themed product that is designed for purpose. **Theory Work** Woods and plastics theory, types of fabric and fabric finishes and exam practice.	**Final NEA** Section B - Producing a design brief and specification and C - Generating design ideas. **Theory Work** Smart, modern and composite materials **New Technologies Mini Mock exam**
Autumn 2	**Project Work**	**Final NEA -Design Contexts released by AQA on 1st June.**

	- Coasters (Resistant Materials) A full CAD/CAM project to create a themed product that is designed for purpose. **- Lampshade design (Textiles)** A first project to consolidate prior learned skills to produce a high quality, well finished and commercially viable product. **Theory Work** Plastic Processes, design processes, iterative design, maths for quantities. **Materials mini mock exam**	Section D - Developing design ideas. **Theory Work** Revision for full mock exam **Full mock exam**
Spring 1	**Project Work (Resistant Materials & Textiles)** **- Mock NEA - Educational Toy/Activity Project** A Mock NEA covering every aspect of the final mock with assessment against the AQA criteria. **Theory Work** Isometric/Orthographic drawings.	**Final NEA** Section E - Realising design ideas and F - Analysing and evaluating. **Theory Work** Revision for full mock exam **Full mock exam**
Spring 2	**Project Work - Mock NEA - Educational Toy/Activity Project** A Mock NEA covering every aspect of the final mock with assessment against the AQA criteria. **Theory Work** Manufacturing considerations and processes. **Manufacturing Processes Mini Mock exam**	**Completion of NEA and mark submission (7th May)** **Exam Revision.**
Summer 1	**Project Work - Mock NEA - Educational Toy/Activity Project**	**Completion of NEA and mark submission (7th May)** **Exam Revision.** **FINAL 2 HOUR EXTERNAL EXAM**

	A Mock NEA covering every aspect of the final mock with assessment against the AQA criteria. **Theory Work** Product Analysis exam questions. **Design 3B Mini Mock exam**	
Summer 2	**Final NEA -Design Contexts released by AQA on 1st June.** Section A - Identifying and investigating design possibilities. **Theory Work** Revision for full mock exam **Specimen Paper 1 Full mock exam**	