

**Design and Technology**

**Year 10 Curriculum Explained**

GCSE Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making and apply technical and practical expertise.

GCSE allows students to study core technical and designing and making principles, including a broad range of design processes, materials techniques and equipment. They will also have the opportunity to study specialist technical principles in greater depth

A Design Technology student will be able to:

1. Design and make products that solve real and relevant problems
2. Consider their own needs, wants and values and other uses needs
3. Design functional and appealing products for themselves and other users
4. Generate, develop and model ideas through talking, drawing and mock ups
5. Develop a variety of ICT skills
6. Select and use a range of tools and equipment to conduct practical tasks in a safe and sensible manner
7. Use a wide range of materials and components including Textiles and ingredients
8. Explore and evaluate a range of existing products
9. Develop links with other subjects such as Maths, Science and Art
10. Use a range of graphic techniques to develop ideas and thinking
11. Understand how key events in Design and Technology have help shape the world
12. Evaluate their own work against design criteria
13. Consider the views of others to improve their work

The curriculum teaches the fundamental ideas which are the building blocks of Design and Technology, and we sequence these in the best order so that students can see how these fundamental ideas link together.

**Links to Knowledge Organisers:**

Timbers and Boards (Resistant Materials)

XXX

Fashion and Textiles

XXX

Visual Communication (Graphics)

XXX

**Design and Technology**

In Year 10, students will remain in their teaching groups with a specialised teacher. They will complete the following Focussed Practical Tasks in order to build up their practical skills and knowledge..

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic/Area** | **Practical Product** | **Key Skills** | **Why they are learning it** |
| Term 1Section 1New & Emerging technologies | Group Tasks | **Industry & Enterprise****Sustainability and the environment****People, Culture & Society****Production techniques & Systems****Informing design decisions** | **The impact of new and emerging technologies on:****• the design and organisation of the workplace****including automation and the use of robotics****• buildings and the place of work****• tools and equipment.****Enterprise based on the development of an effective****business innovation:****• crowd funding****• virtual marketing and retail****• co-operatives****• fair trade.** |
| Term 2Section 2Energy, Materials, systems, devices. | Researchwork | **Energy Generation****Energy Storage****Modern & Smart Materials****Composite materials****Technical textiles****Systems approach to designing****Electronic systems processing****Mechanical devices** | **How power is generated from:****• coal****• gas****• oil.****Arguments for and against the selection of fossil****fuels.****How power is generated from:****• wind****• solar****• tidal****• hydro-electrical****• biomass.****Arguments for and against the selection of****renewable energy.** |
| Term 3Unit 3 Materials and their working properties | Skills work  | **Paper and boards****Natural & manufactured timbers****Metals & alloys****Polymers****Textiles** | **Classification of the types of properties of a****range of materials.****Selecting appropriate materials.****Extracting information from technical****specifications.** |
| Term 4Unit 4Specialist Technical Principles | Skills work | **Forces & stresses on materials and objects****Improving functionality****Ecological & Social footprint****The six R’s****Scales of production** | **How materials can be reinforced, stiffened or made****more flexible: eg lamination, bending, folding,****webbing, fabric interfacing.** |
| Term 5Materials, Sources & Origins | Skills work | **Papers & Boards****Timber based materials****Metal based materials****Polymers****Textile based materials****Electronic Systems** | **students should****know and understand physical properties such as:****• absorbency (resistance to moisture)****• density****• fusibility****• electrical and thermal conductivity.****students should****know and understand working properties such as:****• strength****• hardness****• toughness****• malleability****• ductility and elasticity.** |
| Term 6 Drawing skills & practice NEA | Drawing& SketchingSkills | **freehand sketching, isometric and** **perspective****2D and 3D drawings****system and schematic diagrams****annotated drawings that explain detailed****development or the conceptual stages of****designing** **exploded diagrams to show constructional****detail or assembly** **working drawings: 3rd angle orthographic,****using conventions, dimensions and drawn to****scale** | **To have an overview of the main****categories and types of papers and boards:****papers including:****• bleed proof****• cartridge paper****• grid****• layout paper****• tracing paper****boards including:****• corrugated card****• duplex board****• foil lined board****• foam core board****• ink jet card****• solid white board**. |