All Saints' Catholic High School

Luceat lux Vestra

Subject: Design and Technology	**Year:** 10

10	**Unit 1 - Biomimetic design.**	**Unit 2 - Understanding materials.**	**Unit 3 - Manufacturing and prototyping.**	**Unit 4 - The work of others.**	**Unit 5 - Forces, movement and energy.**	**Unit 6 - GCSE Controlled Task Introduction**
Aim of Unit	This unit intends to introduce pupils to KS4 with a Design and Make project so that pupils might develop a more detailed understanding of the design strategies required for success in the GCSE NEA.	By the end of this unit pupils will know and understand the physical and working properties of a range of materials in order that they can select materials appropriate for a given task. It will also aid pupils in completing written exam questions.	This unit will focus on giving pupils an understanding of a range of manufacturing and prototyping processes that may be required during year 11 and if working in design technology related careers.	This unit intends to allow pupils to further develop the skills of investigation, design, development, manufacture and evaluation needed for successful completion of the GCSE NEA. This will be achieved through the completion of a design challenge.	This unit intends for pupils to understand some of the core and specialist principles that will be required for success in the GCSE written exam.	This unit intends to introduce pupils to design contexts for the GCSE NEA Controlled Task Assessment. By the end of the unit pupils will have identified what they will be investigating in order to complete the NEA in year 11.
Composite Knowledge *(a task that requires several*	In this design and make task pupils will be required to undertake a design challenge based	In this theory-based unit of study pupils will complete a variety of tasks in order to know/understand a	Pupils will complete a range of tasks in order to improve their theoretical and practical	In this design and make task pupils will be required to undertake a design challenge based around the 1980's	In the final theory-based unit of year 10 pupils will complete a variety of tasks in order to learn about topics	In this unit pupils will begin the initial investigation phase of the final project (NEA Controlled Task) of

building blocks or components)	upon a local context.	range of material categories.	understanding of manufacturing.	'Memphis' design group.	related to forces, movement and energy.	the Design Technology GCSE.
Component Knowledge *(the building blocks that together, when known, allow successful performance of a complex task)*	- Investigation of a design context. - Writing a design brief. - Communication and development of design ideas. - Development of CAD models. - Development and manufacture of protypes. - Product testing and evaluation.	In relation to the material categories (paper, timber, polymers and metals) pupil should: - know and understand the sources - know and understand types and properties - be able to select materials based on function, cost and availability - have a practical understanding of the manufacture of products	- How to select and use tools and equipment. - How to shape and form materials. - Know/understand addition processes. - Know/understand wasting processes. - Know and understand a range of surface treatments and finishes.	- Investigation of a design context. - Primary and secondary sources of research. - How to write a specification. - Communication and development of design ideas. - Development of CAD models. - Development and manufacture of protypes. - Product testing and evaluation.	- Know and understand a variety of sources of energy. - Know how energy is generated and stored. - Understand the different types of movement. - Know the function of mechanisms. - Understand the impact of forces and stresses.	- Investigate the design context. - Identify problems, and the needs of clients and users. - Product analysis.
Rationale *(why?):* Links to prior & future learning	Building on the design and make elements of years 7, 8 and 9 this project will allow pupils to further develop the skills and knowledge required for success in the NEA element of the GCSE.	Building on KS3 learning this unit will prepare pupils for sections A, B and C of the GCSE exam. All topics included in the theory sections of the POS are compulsory elements of the Design Technology GCSE.	Strong links with past learning, especially the year 9 chairs project which allows pupils to build the practical skills needed when making models and prototypes in year 11 and in future studies or careers. Also, building on KS3 learning this	Further building on the design and make elements of years 7, 8 and 9 and also the earlier practical elements of year 10. This project will allow pupils to refine and improve the skills required for success in the NEA element of the GCSE.	Building on KS3 learning in DT and Science this unit will prepare pupils for sections A and B of the GCSE exam. All topics included in the theory sections of the POS are compulsory elements of the Design Technology GCSE.	This NEA project is a compulsory element of the GCSE and is worth 50% of the pupils overall GCSE grade. The NEA will be continued in to year 11.

			unit will prepare pupils for sections A and B of the GCSE exam. All topics included in the theory sections of the POS are compulsory elements of the Design Technology GCSE.			
Assessment Task	**Baseline test (AO4).** Question paper based KS3 learning. Including questions on tools, materials, manufacture, and the environment. **Assessment of project work:** -Research (AO1) -Design ideas and development (AO2) -Making (AO2)	**Mock exam (AO4).** Exam paper consisting of past GCSE questions.	**Focused practical task (AO2).** Marks will be awarded for selection and use of tools and materials; also for the quality of the final outcome. **Practice exam questions (AO4).** Extended answer higher mark questions related to the unit.	**Assessment of project work:** -Specification (AO1) -Research (AO1) -Design ideas and -development (AO2) -Making (AO2) -Evaluation (AO3)	**Mock or Pre-public examination. (AO4)** Full 100-mark exam paper of past GCSE questions.	**Formative assessment (AO1)** In line with AQA feedback policy.
Enrichment	Visit to the Whittaker Museum.	Christmas enterprise project.	Virtual visit of design museum.	DT club mentoring.	Duke of Edinburgh skills club.	Duke of Edinburgh skills club.