St Benedict's Catholic School
The Catholic Secondary School for West Suffolk

Design and Technology Product Design Curriculum Guide

Year 12

Autumn	Spring	Summer
'Meeting the needs of users' - Ergonomics - Quality control Pupils start the year with a mixed materials project – design and make a model of a toy, which will enable them to develop their appreciation of customer and user needs, wants & values. They will also consider packaging, and the role it plays in marketing products. Starting with a given content, pupils have to design and make a toy for a younger child. By identifying and considering a younger target market group they generate a creative and working final product. Smaller features and controls will be made from different plastics and produced using CAD/CAM equipment. Alongside practical studies pupils will develop theoretical knowledge throughout the year on a wide range of topics including materials (traditional, smart, composite & modern), product analysis, mechanisms, new energies, manufacturing methods and social, moral, economic & environmental issues. Other key design concepts such as, ergonomics, anthropometrics, planned obsolescence, quality control and legislation are taught and students will look for opportunities to apply this acquired knowledge into their project work and exams.	Workshop and CAD CAM skills are developed and honed through a series of individual tasks; this with a view to build skills and confidence, and promote autonomy in practical activities. Pupils are given an initial brief to design and manufacture a fully functional house door number/name. This can be for their own home or just a hypothetical place. Pupils learn about different plastic forming processes, pewter casting, as well as the need to make jigs and moulds with an insight into related industrial practices. The final product can be made from acrylic or timber and/or pewter. Parts can be formed using CAD/CAM or by hand depending on personal choice. Techniques such as various heat treatment for bending and forming purposes can also be employed. During the research and development stages pupils need to consider the functionality and design of their product and can be influenced by a designer/design movement e.g. Ettore Sottsass (Memphis), Alessi, Phillipe Starck and the Bauhaus. Homework exercises will include; Plastics theory and construction methods, famous designers and the study of existing similar products (product analysis).	The door number project runs into the summer term. Pupils undertake a group crit to enable everyone to receive 'constructive criticism' and allow personal reflection and possible design adaptation or modifications. **Assessment focus** Pupils will be assessed against the exam board criteria from the beginning of year 10 to ensure they are familiar with what they need to do and produce. *Criteria A – Identifying opportunities (10 marks)* *Criteria B – Design Brief and Specifications (10 marks)* *Criteria C – Ideas & Development (30 marks)* *Criteria D – Planning and Making (30 marks)* *Criteria E – Evaluation & Analysis (20 marks)* Immediately after the May half term holiday students will begin their GCSE non exam assessment (NEA). This extended project runs through to February half term in Year 11. The WJEC (Eduqas) exam board set the context as a starting point for pupils to investigate. The NEA involves the production of a design portfolio, a sketch book, all modelling and testing outcomes as well as a final concept model, sometimes with packaging or a Point of Sale.

Assessment and Homework Expectations

To prepare students for their NEA task project, work throughout Year 10 will be assessed using the given criteria below. Please note that the marks awarded during Year10 do **NOT** count towards the students final NEA marks – they are used to provide both staff and students with an idea of the standard of work they are currently producing.

The GCSE course has two different assessment elements;

1. A non-exam assessment task (N.E.A) marked out of 100 marks across 5 different criteria and worth 50% of the final weighting. Students begin the NEA task after June 1st when the Exam Board have provided the given contexts to the task.

Assessment Criteria		Marks	Assessment objective
(a)	Identifying and investigating design possibilities.	10	AO 1
(b)	Developing a design brief and specification.	10	
(c)	Generating and developing design ideas.	30	AO 2
(d)	Manufacturing a prototype.	30	
(e)	Analysing and evaluating design decisions and prototypes.	20	AO 3
	Total	100	

2. A two-hour theory exam paper marked out of 100 marks and worth 50% of the final weighting. This exam is taken at the end of Year 11.

Homework tasks are set twice per fortnight. The tasks set will vary depending on the stage of each project, but will include, personal research, investigation or personal visual responses about the given theme and carrying out product testing exercises. In most cases this will involve pupils printing outcomes and bringing these to their next lesson, rather than submitting via Arbor. The homework will predominately help pupils to enhance and inform their classroom work.

Resources:

Exam Board: WJEC (Eduqas)

To find out further information regarding this particular course, please follow the link below.
https://www.eduqas.co.uk/qualifications/design-and-technology-gcse/#tab_overview

Focus eLearning by Focus Educational Software ltd.
ENGINEERING - DESIGN AND TECHNOLOGY (technologystudent.com)

Theory/ reading:
WJEC Eduqas GCSE (9-1) Design and Technology. ISBN-13 : 978-1510451346
Pocket Posters: The Pocket-Sized GCSE Design & Technology Revision Guide (Daydream Education)
CGP GCSE Design & Technology AQA Revision Question Cards. ISBN-13 : 978-1789084115

Extra and Super Curricular Opportunities

Students will have the opportunity to attend workshop catch up sessions at lunchtimes during the week to gain further one to one support as they need it and develop their skills/projects.
Trips to relevant museums such as the Design Museum are an opportunity for students to develop their knowledge of product design, design movements and key designers.
Year 10 & 11 pupils are invited to participate in opportunities to extend their Engineering, collaboration and design skills by working in partnership with the Smallpeice Trust (sponsored by Vintens) at a residential event held at Culford School in the autumn term. Teachers work to support students to find out more about pathways for careers in design by offering one to one tutorials and advice sessions.