Product Design A Level

- Intent:
- This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries.
- They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototypes of their choice.
- Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

- Context:
- The course will build on the skills, knowledge and creativity developed in KS3 and KS4 and will stretch and enthuse students about the design and making possibilities that are available to them at both A level and beyond.

Scheme of Learning Year Overview

The Big Picture—Intent:
Pupils will extend their knowledge and skills of Product Design and apply them to the research and design element of the Non Examined Assessment project with the aim of achieving the highest grade possible. Pupil goals include studying the theoretical, historical, mathematical and scientific aspects of the subject in order to prepare for the written examinations, via the mock exams and ultimately the final examination papers.

Year 12 Product Design

Content / Units	Skills	Knowledge	Prior—Y11	Next—year 13
NEA Project Section A: Analysis Section B: Investigation Section C: Designing Paper 1: Technical Principles Paper 2: Designing & Making Principles	Analysing and designing commercially viable products Producing creative designs Developing and modelling Evaluating progress of a design Testing a final product for suitability.	What is a design brief and specification How to follow the design process and apply it to the designing and manufacturing How to develop, evaluate and test a working commercially viable product. How to research, develop and create. Mathematics and science for design and manufacture. Material and manufacturing processes for workshop and industry.	Skills and technical practical knowledge covered at KS3 and/or GCSE provide a grounding for practical assessments. All pupils will have theory knowledge from KS3, some will have more gained from GCSE.	Pupils will use the skills and technical knowledge from Y12 to add to their project and to build on for their examinations and beyond KS5.

Implementation	Marches Futures Links	Summative Assessment
Pupils will use the design process to work through the majority of the NEA project, whilst utilising the skills and knowledge gained from the Technical Principles and Designing & Making Principles sections of the course. Technical principles and design knowledge will be delivered as specific themes via examples, videos, hands-on practical sessions and the course book. Pupils to demonstrate LORIC skills in numerous ways through the year; organisation for managing their workload with the coursework project and meeting deadlines with completed work. Resilience to overcome difficulties when problem solving or receiving constructive feedback as well as any potential difficulties with the design process. Initiative for making informed and independent choices about the design of the product as well as materials, tools and processes used in manufacturing processes. The course is delivered to combine theory and the design process to cover all the key steps outlined in the course marking scheme. Pupils will produce A3 electronic portfolios following the sections listed above. Key areas of research, design and development are covered before manufacturing a final product using the tools and materials available in the workshop lessons.	Understanding of '3rd' wave of Industrial Revolution and the Maker generation. E-commerce and crowdfunding platforms to enable sole trader business. Protection of Intellectual Property. Use of CAD/CAM/CNC production techniques for one-off and batch production. Industrial manufacturing techniques for producing products in quantity and to an assured standard (QC and QA). Life skills such as time management and Gantt Charts. Understanding sustainability and the product lifecycle. The importance of the 6 Rs and biodegradable materials. Marketing and presentation skills.	• Sections A,B and C Assessment using NEA marking criteria. • Examination question paper marking for mock exams as well as assessment of individual topic questions interleaved into coursework scheme. • Live tracking of data to inform intervention and praise at any point during the units.

Impact:
Pupils gain skills and knowledge which prepares them for further education in Design Technology, under the heading of Product Design. During Year 1 of the A Level students will make progress on the research and design aspects of the coursework, ready for manufacture in Year 2. Supporting knowledge is built to allow pupils to complete their end of year examinations and answer questions confidently with good examination technique.

Scheme of Learning Year Overview

The Big Picture—Intent:
Pupils will continue to extend their knowledge and skills of Product Design and apply them to the practical element of the Non Examined Assessment project with the aim of achieving the highest grade possible. Pupil goals include studying the theoretical, historical, mathematical and scientific aspects of the subject in order to prepare for the written examinations, via the mock exams and ultimately the final examination papers.

Year 13 Product Design

Content / Units	Skills	Knowledge	Prior—Y12	Next
NEA Project Section A: Analysis Section B: Investigation Section C: Designing Section D: Manufacturing Section E: Testing and Evaluation Paper 1: Technical Principles Paper 2: Designing & Making Principles	Analysing and designing commercially viable products Producing creative designs Developing and modelling Evaluating progress of a design Testing a final product for suitability.	What is a design brief and specification How to follow the design process and apply it to the designing and manufacturing How to develop, evaluate and test a working commercially viable product. How to research, develop and create. Mathematics and science for design and manufacture. Material and manufacturing processes for workshop and industry.	Skills and technical practical knowledge covered at KS3 and/or GCSE provide a grounding for practical assessments. All pupils will have theory knowledge from KS3, some will have more gained from GCSE.	Pupils will use the skills and technical knowledge gained from Y13 to prepare for undergraduate courses, apprenticeships or related careers, beyond KS5.

Implementation	Marches Futures Links	Summative Assessment
Pupils will continue to use the design process to work through the remainder of the NEA project, whilst utilising the skills and knowledge gained from the Technical Principles and Designing & Making Principles sections of the course. Technical principles and design knowledge will be delivered as specific themes via examples, videos, hands-on practical sessions and the course book. Pupils to demonstrate LORIC skills in numerous ways through the year; organisation for managing their workload with the coursework project and meeting deadlines with completed work. Resilience to overcome difficulties when problem solving or receiving constructive feedback as well as any potential difficulties with the design process. Initiative for making informed and independent choices about the design of the product as well as materials, tools and processes used in manufacturing processes. The course is delivered to combine theory and the design process to cover all the key steps outlined in the course marking scheme. Pupils will complete their A3 electronic portfolios following the sections listed above. Key areas of planning, manufacturing at scale, testing and evaluation will be covered before manufacturing a final product using the tools and materials available in the workshop lessons.	Understanding of '3rd' wave of Industrial Revolution and the Maker generation. E-commerce and crowdfunding platforms to enable sole trader business. Protection of Intellectual Property. Use of CAD/CAM/CNC production techniques for one-off and batch production. Industrial manufacturing techniques for producing products in quantity and to an assured standard (QC and QA). Life skills such as time management and Gantt Charts. Understanding sustainability and the product lifecycle. The importance of the 6 Rs and biodegradable materials. Marketing and presentation skills.	• Sections A,B,C,D and E Assessment using NEA marking criteria. • Examination question paper marking for mock exams as well as assessment of individual topic questions interleaved into coursework scheme. • Live tracking of data to inform intervention and praise at any point during the units.

Impact:
Pupils gain skills and knowledge which prepares them for further education in Design Technology, under the heading of Product Design. During Year 2 of the A Level students will complete their coursework by manufacturing, testing and evaluating their product and planning for batch production. Supporting knowledge is further developed to allow pupils to complete their examinations and answer questions confidently with good examination technique.
Pupils are prepared with skills and knowledge for undergraduate courses, apprenticeships or employment.