DESIGN AND ENGINEERING 2019/20 CURRICULLUM OVERVIEW. (Product Design)

	MODULE 1/2	MODULE 3/4	MODULE 5/6
YEAR 10	**Developing Specialist Technical Principles – Project 1** Introduction to GCSE Design and Technology. Introduction to the wide range of materials used across Design and Technology. Students to explore a materials handling collection and sort materials into categories based on material classification or working properties. Students to link material samples to pictures of a variety of products across Design and Engineering and explain and justify why they were chosen for the particular function. The products to demonstrate materials that are used unconventionally, e.g. metal in chain mail clothing, Kevlar in protective clothing, knitted textiles in trainers.	**Contextual Challenge** All students, are set a mini contextual challenge to be carried out in pairs. The chosen context will vary each academic year. Pairs of students are to identify design possibilities through thorough exploration directly linked to the contextual challenge, demonstrating understanding of the problems and opportunities. Pairs to identify a user/client/focus group that is relevant to the contextual challenge and undertake a comprehensive investigation of their needs and wants, with a clear explanation and justification of all aspects. Pairs to show evidence of investigation to support and inform ideas. Pairs are to write a short design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to their chosen context. Pairs are to define design specification criteria, which is fully justified, linking to the needs and wants of the client/user and informs design ideas. Students to sketch out a range of initial design ideas that are imaginative, creative and innovative. These should have been generated avoiding design fixation and with	**Identifying and investigating design possibilities** Exam board to release three design context on 1st June. Students to select one and identify design possibilities through thorough exploration directly linked to the contextual challenge, demonstrating understanding of the problems and opportunities. Students to identify a user/client/focus group that is relevant to the contextual challenge and undertake a comprehensive investigation of their needs and wants, with a clear explanation and justification of all aspects. Students to carry out a comprehensive investigation into the work of others that clearly informs ideas. Students to show a clear design focus and full understanding of the impact on society including; economics and social effects. Students to show evidence of investigation into design possibilities carries on throughout the project, identifying and justifying understanding of all possibilities explored. Students are to write a comprehensive design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to their chosen context. Students are to complete a comprehensive design specification, which is fully justified,

		full consideration of functionality, aesthetics and innovation. Students need to demonstrate evidence of iterative design, which could have resulted from considerations linked to testing, analysis and evaluation of sketches and /or modelling of a prototype. Students then present their pair's idea to other D&E students and obtain evaluative feedback to justify any modifications they would propose for future developments.	linking to the needs and wants of the client/user and informs the subsequent design stages. Students review these throughout the project.
YEAR 11	**Generating design** **Developing design ideas** Students to present their initial design ideas to the class and evaluate them, going on to produce further ideas that show experimentation and clear communication, using a wide range of techniques and design strategies for different purposes. Students are to carry out detailed development work using a wide range of 2D and 3D techniques, including CAD where appropriate, in order to develop a prototype. They should use a wide range of methods to test that their design ideas fully meet all the requirements. Students need to demonstrate evidence of various iterations throughout their design development, which have resulted from	**Realising design ideas** **Analysing and evaluating** Students need to demonstrate they can select the correct tools, materials and equipment, (including CAM where appropriate, and use them consistently safely and with a high level of skill. Students need to ensure the prototype is made accurately by consistently applying quality control checks to very close tolerances. The final prototype needs to show a high level of making/finishing skills appropriate to the desired outcome. The final prototype needs to have the potential to be commercially viable and meet the needs of the client/user Students need to demonstrate evidence of various iterations throughout their design development, which have resulted from considerations linked to testing, analysis and evaluation of the prototype.	**EXAM PREPARATION** Exam practise on Technical principles- paper 1 and Designing and making principles – paper 2.

	considerations linked to testing, analysis and evaluation of the prototype. Students need to show ongoing analysis and evaluation throughout the project that clearly influences the design brief, specification and manufacturing specification. They need to explain how they have selected appropriate materials and components through extensive research into their working properties and availability. They need to complete a fully detailed and justified manufacturing specification that can inform manufacture.	Students need to show ongoing analysis and evaluation throughout the project that clearly influences the design brief, specification and manufacturing specification. Students need to complete comprehensive testing of all aspects of the final prototype against the design brief and specification. They need to justify any modifications they have made or would propose for future developments.	