

Product Design Year 12	
Half term 1	Students will develop skills and knowledge in the use of 2d CAD and undertake a design and make project which utilises CAD and the laser cutter. Students will also acquire knowledge of the use of CAD in industry and its use with a range of materials and products. Appreciation of design movements and their impact on the design industries will be studied. Students will also acquire the skills and knowledge of the 3D computer modelling programme "Strata 3D CX" and also more traditional methods of 3d drawing and rendering techniques, these virtual and visual methods of communication will be used throughout the course to aid their design work.
Half term 2	Students will develop an understanding of the performance characteristics of materials and will concentrate on timber. Students will also design and make a product using timber, selecting tools, equipment and processes as their own individual project requires. The design make project will develop their understanding of the design process, their ability to critically analyse and evaluate their own work and those of others.
Half term 3	Students will develop an understanding of the performance characteristics of materials and will concentrate on Polymers, smart and modern materials. The forming, redistribution and addition processes associated with polymers will be studied. Students will also undertake a design and make project combining timbers and polymers.
Half term 4	Continuation of the timber/polymer design and make project. Students will develop an understanding of the performance characteristics of materials and will concentrate on Metals. Students will study Modern and industrial commercial practice which will include a visit to a manufacturing plant. Students will acquire knowledge of environmental issues, sustainability, the 6'Rs, design for manufacturing, packaging, repair and disposal through investigating and disassembling a range of products.
Half term 5	Start of NEA portfolio. This is the design and make project which continues into year 2 and is 50% of the A level course. Identifying and investigating design possibilities, including primary and secondary research. Students will be expected to construct their own research, making their visits, surveys and interviews which will lead to them generating their own analysis, design brief and specification.
Half term 6	Students will generate their own design proposals to meet the requirements of their own design brief and specification, this will include investigations of ideas through product prototyping. Students will be expected to mathematically calculate the amounts of materials and costs of their project. Maths will be examined (20%) in the final two exams and students will learn how to work out various mathematical problems such as volumes, areas and true lengths of line.
Independent study expectations	Students are expected to do least four hours study each week which will support students in consolidating learning from lessons and to enable enhanced progress in the design and make projects. Within this four hours you are expected to answer exam board questions. Students are expected to create a "scrapbook" of information about current design trends and innovations in product development and technology. Students should read a monthly design or engineering journal e.g. Blueprintmagazine.co.uk , designweek.co.uk
By the time you finish key stage 5 you'll be...	Fully aware of a range of materials, processes and industrial applications. You'll be able to draw and render design ideas in 2d and 3d and apply this to 3d computer modelling to create photorealistic virtual models. You will be able to create engineering drawings using 2d CAD and use this to create laser cut products and prototype models. Able to research detailed information for the NEA and able to analyse this information to create your own design brief and specification to generate and test your own design ideas which will lead to the making of your design in year two.