YEAR 12 DT CURRICULUM PROGRESSION OVERVIEW

In Y12 the students will learn how to complete a design portfolio based on a theme set by the department. The aim is to ensure that the students have the ability to produce a high-quality folio in preparation for their A level NEA which will start at Easter of Y12. Throughout the year the students will cover the technical principles required for the 2.5hr exam. Through the practice NEA the students will learn how to use the CAD/CAM facilities to help enhance their skills. The pupils will work with a variety of materials not covered at KS4 such as the expanded use of Acrylics and steel.

	Term 1	Term 2	Term 3
Topic	Preparation for NEA and Exams	Preparation for NEA and Exams	NEA and Preparation for Exams
Core Knowledge/ **Threshold Concept**	Understand the properties of; • Woods • Softwoods • Hardwoods • Manufactured boards • Metals • Ferrous • Non ferrous • Alloys • Plastics • Thermoplastics • Thermosets • Elastomers Concepts: Iterative design process Bio-mimicry Writing a design brief and specification for a client Creative drawing techniques The use of colour and shade to enhance designs Computer graphics	Detailed understanding of; • Paper and boards • Composites • Smart materials • Modern materials • Workshop testing • Woods • Metals • Plastics Skills: Three-dimensional sketching and rendering. Effective and safe methods of cutting timber. Producing working drawings. Using CAD software. Accurate marking out of materials using appropriate tools. Safe and accurate drilling. Safe and accurate use of a mortising machine. Safe and accurate use of a router. Cutting woodwork joints Using the laser cutter Using the 3D printer Sanding wood. Assembling a product.	Detailed understanding of; • Materials characteristics • Malleability • Toughness • Hardness • Resistance to corrosion and degradation • Thermal conductivity • Electrical conductivity Start NEA research section

	Skills: Graphical drawing skills (isometric, 2pt and 3pt perspective). Computer manipulation Setting out a board to minimise waste. Using a biscuit cutter	Effective use of PVA. Applying a surface finish. Modelling	
Why this learning now?	The sequence of learning is based on the specification provided by AQA. In the first term we introduce the students to the materials and cover their properties in-depth so that the students can make informed decisions when selecting the materials for their first assignment. After this we follow the prescribed list provided by the AQA specification. In term one of Y12 we embark on a minor project that is used to develop the students' skills for the portfolio work. In term one we focus on research skills ensuring that the students are well prepared for the NEA.	In term two term 2 the minor project focusses on the designing element of the course where more advanced drawing techniques are taught to the students. After this we embark on modelling and the use of models to inform design decisions. Finally, the students are encouraged to realise their designs.	At the start of term 3 we begin the students NEA, this gives the students enough time to complete a high-quality project.
Assessment Opportunities:	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons

Learning at Home	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements.	Homework's are set every week to recap on the learning of each taught element and to also cover the irements.	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements.
Key Vocabulary	• physical and mechanical properties (working characteristics) • product function • aesthetics • cost • manufacture and disposal • malleability • toughness • hardness • resistance to corrosion and degradation • thermal conductivity • electrical conductivity • metals (ferrous, non-ferrous, alloys) • woods (hardwoods, softwoods, manufactured boards) • polymers (thermoplastics, thermoset polymers, elastomers) • papers and boards • composites • smart materials • modern materials • tensile strength • toughness • hardness • malleability • corrosion • conductivity.	• layout paper: sketch pads • cartridge paper: printing • tracing paper: copying images • bleed proof paper: marker rendering • treated paper: photographic printing • watercolour paper: painting • corrugated card: packaging • bleached card: greeting cards and high quality packaging • mount board: modelling • duplex card: food packaging • foil backed and laminated card: drinks packaging • metal effect card: gift packaging • moulded paper pulp: eco-friendly packaging • foam board: model making • fluted polypropylene: signs and box construction • translucent polypropylene sheets: packaging • styrofoam: modelling and formers • low density polyethylene sheet: wrapping, packaging and bags • plastazote foam: protective packaging • cellulose acetate: packaging • polyactide sheet and film: biodegradable packaging.	• softwoods: • pine • spruce • Douglas fir • redwood • cedar • larch • hardwoods: • oak • ash • mahogany • teak • birch • beech • manufactured boards: • plywood • marine plywood • aeroply • flexible plywood • chipboard • medium density fibreboard (MDF) • veneers and melamine formaldehyde laminates • ferrous: • low carbon steel • stainless steel • high speed steel (HSS) • medium carbon steel • cast iron • non-ferrous: • aluminium • copper • zinc • silver • gold • titanium • tin • ferrous alloys: • stainless steel • die steel (tool steel) • non-ferrous alloys: • bronze • brass • duralumin • pewter• thermoplastic: • low density polyethylene (LDPE) • high density polyethylene (HDPE) • polypropylene (PP) • high impact polystyrene (HIPS) • acrylonitrile butadiene styrene (ABS) • polymethylmethacrylate (PMMA) • nylon • rigid and flexible polyvinyl chloride (PVC) • Polyethylene terephthalate (PET) • thermosets, with specific reference to their: • urea formaldehyde (UF) • melamine formaldehyde (MF) • polyester resin • epoxy resin.
Spiritual, Moral, Social and Cultural concepts covered	Throughout this course pupils are taught about the social, moral and cultural impact pf design and technology, including the products and materials we use each and every day and the impact this has on our environment.		
Links to careers and	There is a constant referral to careers and industry in all topics covered as part of the NEA and exam content.		

the world of work	

YEAR 13 DT CURRICULUM PROGRESSION OVERVIEW

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.

	Term 1	Term 2	Term 3
Topic	NEA and Exam Preparation	NEA and Exam Preparation	Exam Preparation
Core Knowledge/ **Threshold Concept**	Modern and commercial practice. Materials IT, CAD & CAM Virtual modelling Rapid prototyping, electronic data exchange Famous designers and design movements Investigation methods Writing a design brief Writing a design specification How to sketch with a pen. Scales of production Different methods of modelling both virtual and physical Socio and economic effects on production Skills • Three-dimensional sketching and rendering. • Effective and safe methods of cutting timber. • Producing working drawings. • Using CAD software. • Accurate marking out of materials using appropriate tools. • Safe and accurate drilling.	Model development CAD/CAM Practical outcome Evaluation Major developments in technology Responsible design The product life cycle QA and QC Different standards for products and components 1974 Health and Safety at work act Protecting intellectual property **Complete NEA**	Exam preparation Past papers Exam technique

	• Safe and accurate use of a mortising machine. • Safe and accurate use of a router. • Cutting a tenon joint • Preparing for welding • Soldering components • Using the laser cutter • Using the 3D printer • Sanding wood. • Assembling a product. • Effective use of PVA. • Applying a surface finish. • Modelling		
Why this learning now?	The NEA is a portfolio of design work based on the student solving a specific problem set by AQA. The students follow the design strategy taught at both KS3 & 4 to arrive at a final solution that can be assessed. The theoretical element of the course follows the set list of topics provided by AQA	The NEA is a portfolio of design work based on the student solving a specific problem set by AQA. The students follow the design strategy taught at both KS3 & 4 to arrive at a final solution that can be assessed. The theoretical element of the course follows the set list of topics provided by AQA	The theoretical element of the course follows the set list of topics provided by AQA
Assessment Opportunities:	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements. A test is carried out at the end of each term to identify gaps in learning followed by plugging the gaps session to review areas of issue. Each element of the project is marked using the WINS system where gaps are also identified and the pupils asked to act upon them. Responsive AFL used in all lessons
Learning at Home	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements.	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements.	Homework's are set every week to recap on the learning of each taught element and to also cover the course information requirements.

Key Vocabulary	• copyright and design rights • patents • registered designs • trademarks • logos • customer identification • labelling • packaging • corporate identification • global marketing: • entrepreneur • market research • interviews • human factors • focus groups • product analysis and evaluation • the use of anthropometric data and percentiles • the use of ergonomic data	• arts and craft movement • Art Deco • Modernism, eg Bauhaus • Post modernism, eg Memphis • Phillipe Starck • James Dyson • Margaret Calvert • Dieter Rams • Charles and Ray Eames • Marianne Brandt • micro electronics • new materials • new methods of manufacture • CAD/CAM.	• British Standards Institute (BSI) • International Organisation for Standardisation (ISO) • Restriction of Hazardous Substances (ROHS) directive • battery directive • polymer codes for identification and recycling • packaging directives • WEEE directives • energy ratings of products • eco-labelling: • the Mobius Loop • the European Eco-label • the EC energy label • the Energy Efficient label and logo • Forest Stewardship Council (FSC) • EPA energy star.
Spiritual, Moral, Social and Cultural concepts covered	Throughout this course pupils are taught about the social, moral and cultural impact pf design and technology, including the products and materials we use each and every day and the impact this has on our environment.		
Links to careers and the world of work	There is a constant referral to careers and industry in all topics covered as part of the NEA and exam content.		