Year 7 Design Technology

In year 7 Design & Technology students are exposed to new experiences through the use of exciting and interesting tools, equipment and materials. In order for them to use these safely and confidently we use a phased approach starting with very structured projects with simple hand tools being used through to independent working with multiple tools and machinery. These projects are based on practical skills, material knowledge, drawing skills, and independent problem solving skills.

Year 7 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic(s)	**Topic Title** Plastics Knowledge through Mobile Phone Stand Students are introduced to: Primary Source for plastic. Thermoplastic and Thermosetting plastic differences and properties. Health and Safety. Tool knowledge Modelling Equipment (Strip Heater) They produce an acrylic mobile phone stand which allows them to demonstrate how to finish and mould **plastic** using heat.	**Topic Title** Drawing Skills / Communication Students are shown how to sketch more accurately using a variety of techniques focusing on rendering wood,plastic and metal isometric drawings and producing a fully rendered isometric sketch of a pencil sharpener.	**Topic Title** Paper & Board/Communication Students are introduced to packaging and developments, branding and logos in making a card superhero model using a variety of hand tools.	**Topic Title**	**Topic Title**	**Topic Title**

Assessment	Health and Safety in workshop/knowledge test.	Drawing assessment in lesson.	Superhero card model is assessed.			
KS 3 National Curriculum	Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	Develop and communicate design ideas using annotated sketches,				

Year 8 Design Technology

Students develop the key skills that they have started in year 7, developing a range of materials knowledge specifically around modelling and techniques.

Their knowledge from the previous year is tested through retrieval questioning making reference back to previous projects in the form of tools and materials. Note each of the project's skills are closely linked to the previous year. **PROJECTS WILL RUN IN DIFFERENT TERMS WITH EACH CLASS DUE TO RESOURCES.**

Year 8 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic(s)	**Topic Title** Developing designing skills knowledge through the Glider project. Students are developing knowledge of **paper and board and graphics. Materials involved include foamboard, card and vinyl.** They will develop knowledge of the **external forces** acting on a plane to help them develop their making skills. They will produce a range of design ideas. Graphic skills will be adopted and used to design the packaging to house the final product.	**Topic Title** Developing making skills through the Glider project. Students are developing knowledge of working with modelling tools to mark out and build a small scale glider They will experience methods of assembling 2D parts to create a 3D working prototype. This will focus on improving their **marking out, cutting and shaping skills and tool knowledge**. They will **evaluate** their product by **testing** their outcome, keeping a record of their results. They will create the packaging with it.	**Topic Title** Developing drawing and communication skills Students are developing knowledge of design and practising their technical 2D and 3D drawing skills. They are learning how to communicate information to the correct standards.	**Topic Title** Drawing and communication skills through the **Architectural CAD project.** Students are developing knowledge of **design periods to produce a digital drawing that is fully rendered.** They will learn how to use some basic features of cad to create a final presentation drawing to assist their making.	**Topic Title** Students develop their modelling skills further to produce a small scale architectural building. They will learn some key methods of working with a range of modellling tools, materials and equipment. They will focus on improving their **marking out, cutting and assembly skills.**	**Topic Title** Students will develop their 2D CAD skills and knowledge of the laser cutter to design and make a ruler. They will learn how to be more independent and work through **CAD tutorials** to enhance their knowledge. They will then produce a ruler from the skills they have learnt.

Assessment	Students will have a 2 hour test to demonstrate their ability to be independent and show their creative designing skills.	Final product can be tested and evaluated.	Final drawings	Communicating ideas and designing skills using cad techniques.	Students making skills are evident in the key making skills demonstrated in the final product.	A 2 hour test to design and draw the ruler using CAD.
National Curriculum	Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions Develop creative ideas that illustrate innovative, functional, appealing products that respond to needs in a variety of situations. Use research and exploration, such as the study of materials and forces acting on a working prototype.	Understand how more advanced mechanical systems used in their products enable changes in movement and force. Cross curricular science ideology used to enhance the function and form of a final product.	Develop and communicate information using appropriate British Drawing standards.	Presentation and computer based tools.	Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups	Develop and communicate design ideas using annotated sketches, use research and exploration, such as the study of different cultures, to identify and understand user needs Analyse the work of past and present professionals and others to develop and broaden their understanding

Year 9 Design Technology

Students develop the key skills that they have started in year 8, developing the range of materials knowledge specifically around paper and board. Their knowledge from the previous year is tested through retrieval questioning making reference back to previous projects in the form of tools, materials and designing. Note each of the project's skills are closely linked to the previous years.
PROJECT RUN IN DIFFERENT TERMS DUE TO RESOURCES.

Year 9 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic(s)	**Topic Title** Drawing/Communication skills Students develop their research skills by studying an iconic piece of industrial design. They then develop their drawing and communication skills by sketching and designing their own version of this iconic design which is linked to a design brief and specification.	**Topic Title** Developing making knowledge through industrial design project Students develop practical manufacturing skills by producing a range of templates to help them with the cutting and shaping of their chosen design. Students have the chance to use the laser cutter, 3D printer and vinyl cutter to enhance their work.	**Topic Title** Students to develop CAD skills producing their iconic design on Google SketchUp. They are learning, **push, pull, rotate, material rendering, dimensioning and adding textures.** They are also learning design and spacial awareness. Students have the opportunity to 3D print their design on the 3D printer.	**Topic Title** Developing designing skills knowledge Students develop their research and designing skills by studying the De Stijl design movement and notable pieces of work. Students then develop their designing skills by designing and modelling a stained glass window effect piece based on the De Stijl movement	**Topic Title** Developing making knowledge through industrial design project Students develop their manufacturing skills by making their chosen De Stijl inspired design. Students will be using foam board and acetate as well as hand tools to create their final finished product.	**Topic Title** Drawing/Communication skills Product Study Students learn about designers or design movements from the past by studying and redesigning a product. Year 9 Eames chair.
Assessment	Design work to be assessed against creativity and originality.	Design work to be assessed against creativity and originality. Practical work to be assessed, focus on marking out accurately as very small.	Design work to be assessed against creativity and originality.	Design and research work to be assessed against creativity and originality.	Practical work to be assessed, quality of finish.	Practical work assessed.
National Curriculum	Use research and exploration, such as the study of different cultures, to	Understand and use the properties of materials and the performance of	Develop and communicate design ideas using annotated sketches,	Analyse the work of past and present professionals and others to develop	Develop and communicate design ideas using annotated sketches,	Analyse the work of past and present professionals and others to develop

	identify and understand user needs	structural elements to achieve functioning solutions	use research and exploration, such as the study of different cultures, to identify and understand user needs	and broaden their understanding	use research and exploration, such as the study of different cultures, to identify and understand user needs	and broaden their understanding

Year 10 Design Technology

Students develop the key skills that they have started in year 9, developing the range of materials knowledge specifically around the course requirements which in Technology is EDEXCEL Design Technology Paper & Board. Through these modules retrieval questioning will be carried out through google quizzes/assignments either in lesson or as a homework task.

Year 10 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Design Technology	**Topic Title** **Introduction to communication techniques** Students are taught how to sketch using isometric and render objects to make them look realistic. Students produce a foamboard model of a camera, using the laser cutter and vinyl cutter to make customised parts and decals. Students use CAD software to draw their camera, they then use the 3D printer to print out a version of their camera	**Topic Title** **Camera design and development** Students complete a mini project based upon the camera independent work that they have completed. Students will look at existing cameras and applying ACCESS FM to carry out a product study. Students will write a brief and specification to a chosen target market and produce developed designs of their original idea. Students will then model their final design using styrofoam and make additional features on the laser cutter, 3D printer and vinyl cutter. Students will then design and make appropriate packaging for the camera using white board.	**Topic Title** **Camera design and development** Students complete a mini project based upon the camera independent work that they have completed. Students will look at existing cameras and applying ACCESS FM to carry out a product study. Students will write a brief and specification to a chosen target market and produce developed designs of their original idea. Students will then model their final design using styrofoam and make additional features on the laser cutter, 3D printer and vinyl cutter. Students will then design and make appropriate packaging for the camera using white board	**Topic Title** **Pencil design and packaging** Students design and produce a desk pencil holder that will be based around a theme of their choice. The product will then be manufactured on the 3D printer with suitable presentation packaging also designed and printed. Students will look at branding and promotion, different printing and manufacturing methods.	**Topic Title** **Board game** Students will be given a design brief and specification to which they will use to research and design a simple board game. Students will then develop their design ideas into a final finished product using a range of papers and boards. Students will use a range of cutting tools as well as CAD/CAM and printing methods. Suitable packaging will be designed and made that will reflect the nature of the board game.	Coursework Students will produce a large portfolio of work which will be based on a given brief from the board. The area will be based on Paper & Board specification, unless agreed with Head of Department. Students to focus on: Investigation of the Need. Client/User Initial Research Design Brief Specification
Assessment	Design and practical work is assessed along with camera design	Design and practical work is assessed along with kitchen	Design and practical work is assessed along with bird box	Design and practical work is assessed along with kettle product	Design and practical work is assessed along with desk tidy	

	independent work.	condiment holder independent work.	independent work.	analysis independent work.	independent work	

Independent Work
Details of what types of activities will be set to do as independent work (homework), no need to list every task specifically There is a comprehensive list of Google Classroom assignments that are derived from the course specification. The majority of these tasks are digitally assessed. Designing and sketching tasks are given in paper format to help students appreciate the standard of work required for their GCSE NEA in year 11. There are six KEY areas of study to help them prepare for the core aspect of their exam, these are research and design based tasks - 1. Camera design 2. Kitchen condiment holder design 3. Bird box design 4. Kettle product analysis 5 Desk tidy design . Students are given a revision guide at the start of year 10 and throughout year 10 and year 11 are expected to work through this book and the online version on a weekly basis.

Year 11 Design Technology

Students will build upon the foundation work accomplished in Year 10 and use this to complete their NEA.

Year 11 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2

Topic(s)	Coursework Students will produce a large portfolio of work which will be based on a given brief from the board. The area will be based on Paper & Board specification, unless agreed with Head of Department. Students to focus on: Investigation of the Need. Client/User Initial Research Design Brief Specification Students will also be engaged in knowledge based learning on Google Classroom assignments tracking course theory.	Coursework Students to focus on Initial ideas Review of ideas Modelling possible solutions Further Research Students will also be engaged in knowledge based learning on materials and maths. Preparation for Mock exam	Coursework Students to focus On: Iterative design process followed to develop the final design solution. This will involve: CAD/CAM Client/user feedback Working drawing Manu.spec. Some students to undergo the start of Making the final solution Prep for final exam with emphasis on the specialism of Paper & Board	Coursework Students to focus On: Iterative design process followed to develop the final design solution. This will involve: CAD/CAM Client/user feedback Working drawing Manu.spec. All students to undergo the start of Making the final solution Prep for final exam with emphasis on the specialism of Paper & Board	Coursework Students to complete: Final Design Orthographic Client/User Interview/feedback Manu.Spec Students will begin to test and evaluate the prototype. Evaluation against the spec and client/context. Prep for final exam with emphasis on the specialism of Paper & Board	Prep for final exam with emphasis on the specialism of Paper & Board
Assessment	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	

	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	

Year 10 Engineering

Students develop the key skills that they have started in year 9, developing the range of materials knowledge specifically around the course requirements which in Technology include EDEXCEL Design Technology and WJEC Engineering. Through these modules retrieval questioning will be carried out through google quizzes/assignments either in lesson or as a homework task.

Year 10 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Engineering	Engineering	Engineering	**Engineering**	**Product analysis**	**Unit 3 Exam**	**Unit 1 Engineering**

	Orthographic drawing learnt and practised by hand using correct views, labels and dimensioning. Google sketch up and export this to create a CAD orthographic drawing Students will also complete a small practical skills based activity based on producing a spanner at the same time as drawing skills.	Students tp learn **practical skills** of reading orthographic drawings and using metal working tools to high degree of accuracy. Drawing communication skills improved for drawings, cross sectional, cutaway drawings, exploded drawings. Material knowledge introduced.	**Material properties, types of materials and there uses, testing of material and finishing material.** Students will also complete a small practical skills based activity at the same time as drawing skills.	**and function of material and components, ACCESS FM.** **Unit 3 Exam** preparation. Students to learn about materials, processes , drawing styles in preparation for external early entry exam.	preparation. Students to learn about materials, processes , drawing styles in preparation for external early entry exam.	**Design coursework. Students to learn about designing products, Accessfm analysis, CAD drawings, isometric drawings, specifications, complete disassembly of product.**
Assessment	Through classroom work and quiz based activities on google sketchup. Through practical project.	Through classroom work and quiz based activities on google sketchup. Through practical project.	Through classroom work and quiz based activities on google sketchup. Through practical project.	Through classroom work and quiz based activities on google sketchup. Through drawing test project.	Through classroom work and quiz based activities on google sketchup. Through drawing test project.	Through classroom work and quiz based activities on google sketchup. Through practical project.

Independent Work
Details of what types of activities will be set to do as independent work (homework), no need to list every task specifically Students will completing work that is not done within the lesson they will also be given quiz questions that they need to complete until they get a required mark which is based on individual targets. The key point to students in this subject is that they must complete work quickly as practical and drawing projects have strick time frames which students must complete work within.

Year 11 Engineering

Students will build upon the foundation work accomplished in Year 10 and use this to complete their NEA. Regular weekly assignments via Google Classroom will be set to enhance their knowledge further to prepare for the mock and final exam. They can access their Google work to retrieve information to help structure their own coursework. On going tests via the classroom will help monitor their knowledge.

Year 11 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2

Topic(s)	Coursework Students will produce a large portfolio of work which will be based on a given brief from the board. The area will be based on Timber specification, unless agreed with Head of Department. Students to focus on: Investigation of the Need. Client/User Initial Research Design Brief Specification Students will also be engaged in knowledge based learning on materials and maths.	Coursework Students to focus on Initial ideas Review of ideas Modelling possible solutions Further Research Students will also be engaged in knowledge based learning on materials and maths. Preparation for Mock exam	Coursework Students to focus On: Iterative design process followed to develop the final design solution. This will involve: CAD/CAM Client/user feedback Working drawing Manu.spec. Some students to undergo the start of Making the final solution Prep for final exam with emphasis on the specialism of Timber	Coursework Students to focus On: Iterative design process followed to develop the final design solution. This will involve: CAD/CAM Client/user feedback Working drawing Manu.spec. All students to undergo the start of Making the final solution Prep for final exam with emphasis on the specialism of Timber	Coursework Students to complete: Final Design Orthographic Client/User Interview/feedback Manu.Spec Students will begin to test and evaluate the prototype. Evaluation against the spec and client/context. Prep for final exam with emphasis on the specialism of Timber	Prep for final exam with emphasis on the specialism of Timber
Assessment	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	Students will be monitored via a class tracker with a breakdown of all marks awarded. Progress chart will inform students as to what they have to do to reach their target grade. Generic verbal/written	

	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	feedback given via CAB to guide students in each of the sections of the NEA.	

Independent Work
Details of what types of activities will be set to do as independent work (homework), no need to list every task specifically Students will continue to complete assignments,revision tasks, quizzes to help support them for the final exam. They will also be planning their intentions as to how to make progress with their NEA via the feedback form botheir CAB and tracker. Independent sessions available after school/lunchtimes to facilitate progress with both practical and design folder.

ARETÉ LEARNING TRUST
Being the best we can be

Stokesley School & Sixth Form College
Being the best we can be

Students will mainly learn through Focussed Practical Tasks, supporting this with independent study. Visits and 'Live' project briefs to consolidate learning. Students can revisit their Core theory via their Google Classroom or chosen exam board and build upon this knowledge to create a bank of resources for revision purposes. Regular questioning and homeworks used to ensure students can implement knowledge learnt in class.

Year 12 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic(s)	**FPT/Design practice** Students will learn about different design strategies and methods to create potential presentation sheets to show to a client. (contact ICON Engineering to create a 'live' design brief?) Tour of company to study injection moulding **FPT** Students are to enhance their sketching ability and design a conceptual product e.g power drill **Core theory** Material Properties Investigation -see Independent task 1 Smart materials	**Theory** Digital technologies including the use of CAD/CAM - wider implications Rapid prototyping Mass production Global Marketing **FPT** Students are to enhance their making/modelling ability and make a conceptual product e.g power drill. This will allow students to extend their making skills using a range of different processes to produce a realistic prototype to show to a potential client. (small enough for Northallerton students to transport) Visit to ICON	**FPT** Students are to design and make an architectural model. Possibly a bike shelter/seating canopy for the school grounds. Client to be sourced. **Theory** Paper, card, composites Textiles	**FPT** Students are to complete the architectural model. And test and evaluate it via the user/client. Maths integrated at key points and recorded in the design evidence. **Theory** Metals - students to complete a sand casting example Systems - utilise engineering resources for students to study.	**Planning and preparation of A level NEA** Possible design opportunities explored. Client sourced **Theory/FPT** Electronics - students to complete a circuit that may have the potential to be included as part of their A level NEA.	**Planning and preparation of A level NEA** Primary investigation of problem situation, materials and processes. Initial Design Brief and Specification generated.

	Polymers **FPT** A wooden carcase built up of 4 major constructional joints. Finished with 4 different finishes. Students to use a range of tools, equipment and processes linked to extending their timber knowledge.	Engineering for client feedback				
Assessment	Structured feedback with ambition time incorporated to improve grades.					

Independent Work
Details of what types of activities will be set to do as independent work (homework), no need to list every task specifically **Students will be completing work at home following on from the lesson content for each term.** **Term 1 - Students create their own presentation of a given product linked to Polymers and injection moulding.** **Term 2 - Students produce their own Google Quiz based upon each of the categories listed above and test each other.** **Regular maths intervention solving practical problem situations - linked to Google classroom** **Term 3 - Students study a design period and give a Google Slides presentation.** **Term 4 - Extended writing exemplar questions provided to test knowledge of core materials e.g Metals** **Term 5 and 6 - past paper examples completed** **Initial stages of the A level NEA to be completed for over the summer prior to return.**

Year 13 Design Technology

Students will identify the project that best suits their future needs. They are to find a client and explore their problem situation. A design and make project that will encompass the knowledge gained in yr12 in order to create a comprehensive account of solving a design problem.

Year 13 Curriculum	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2

Topic(s)	Students will produce a range of design ideas and collaborate with clients. Iterations of suggestions explored and developed.	A final solution is reached through iterative development. CAD/CAM Disassembly User intervention etc. Review Idea Materials, components sourced/cut ready for making.	Making the Prototype Continuous development of idea	Making the Prototype Testing and Evaluation.	Complete the Prototype Prepare for final exam - past papers.	
Assessment	Details of how the students will be assessed Generic feedback given with links to exam spec. Exemplar material examined for inspiration/guidance Students are banded with areas highlighted as to what progress needs to be made.	Generic feedback given with links to exam spec. Exemplar material examined for inspiration/guidance Students are banded with areas highlighted as to what progress needs to be made.	Generic feedback given with links to exam spec. Exemplar material examined for inspiration/guidance Students are banded with areas highlighted as to what progress needs to be made.	Generic feedback given with links to exam spec. Exemplar material examined for inspiration/guidance Students are banded with areas highlighted as to what progress needs to be made.	Individual marking and feedback of past papers and questions.	

Independent Work
Details of what types of activities will be set to do as independent work (homework), no need to list every task specifically Knowledge of the core theory studied : New and Emerging Technology - Students produce a leaflet linked to a given area. Copied for other students to use. Energy sources - Poster produced. NEA - Client is contacted on a regular basis for feedback. User intervention where relevant. Students will continue with heir design folder on a weekly basis.