NKS Design & Technology Curriculum Map 2022-23

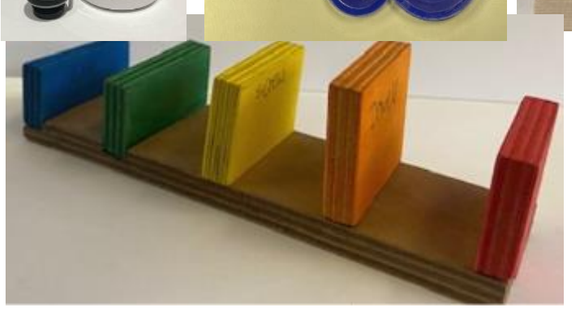
The purpose of studying Design & Technology at NKS is…

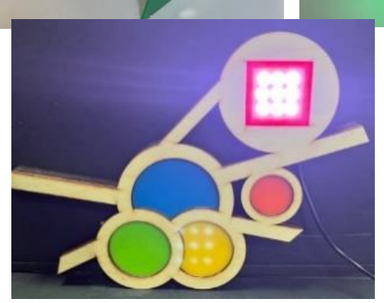
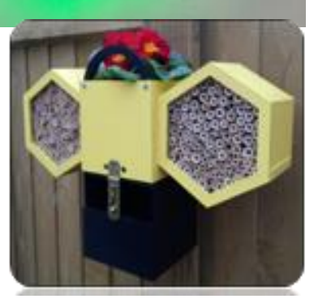
…to develop the students' sense of awareness of the world of design and manufacture that surrounds them. We encourage our students to combine practical and technological skills with creative thinking to design and make products and systems that meet client requirements. Students need to understand the work of designers and understand the need for greater creativity and sustainability. The students reading is developed and supported throughout lessons and with their wider research. The development of these skills ensures that independent learning is enhanced and that the self-esteem of the students is raised. Implicit within this is the sense of enjoyment and achievement that the students feel throughout the learning process. Numeracy is a core element of Design and Technology and we develop the students skills to be apply their mathematical knowledge in real-life situation. We provide the students will a core foundation of subject specific knowledge and understanding and develop key transferrable skills.







For further information please contact:

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NKS Design & Technology Curriculum Map 2021 Year 7

Prior to joining NKS students will have studied…Design & Technology through a variety of projects at Primary school from a craft, food, textiles or environmental viewpoint. They will be new to Design and Technology in the secondary school environment, where we focus on a product design focus.

Our curriculum builds on and extends this by… Design and Technology in year 7 provides a foundation of core communication, practical and technical skills through focused practical tasks designed to develop a foundation core skills and support learning of key technical knowledge. They are Introduced to the 6 core skills: **Investigate, Design, Develop Realise, Analyse, Evaluate and use of technical knowledge.** They will produce Folder work, theory notes and practical working outcomes. This is used to build on and develop skills each year in preparation for year 8. We will encourage the students to become ethical and responsible designers who are aware of the impact that products have on the wider world and exploring a range of cultural and historical influences.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	<u>Water bottle project & communication skills</u> A foundation of a range of key skills through focused practical tasks to develop core skills and support learning of key technical knowledge. The students will all design and manufacture a personalised re-useable water bottle/ bag for life. **Investigate skills** ○ Exploring a task ○ Exploring themes ○ Explanation of research ○ Understanding specifications **Design skills** ○ Communicating and presenting design ideas ○ Creating distinct ideas ○ Drawing and line quality ○ 2D and 3D drawing ○ Isometric drawing ○ Enhancement techniques ○ Rendering **Analyse skills** ○ Annotating design ideas ○ Linking designs to specifications ○ Considering the views of others **Technical knowledge:** ○ Safe workshop practice with the heat press ○ Dye sub process (step by step) ○ Sustainability and ethics ○ Timbers (Part 1-Properties and classification) ○ 6Rs ○ The work of others: Exploration of influential designers.		<u>Maze project & communication skills</u> A foundation of a range of key skills through focused practical tasks to develop core skills and support learning of key technical knowledge. The students will all design and manufacture a unique maze puzzle game. **Development skills** 1. Problem solving and annotation 2. Designing to scale and within specified tolerances 3. Introduction to 2D design (CAD), to cut and etch lines 4. Introduction to 2D design (CAD), to draw in isometric 5. CAD image enhancement skills **Realise skills** ○ Safe workshop practice with the laser cutter ○ The use of CAM to create the maze (laser cutter) ○ Assembly of a product ○ The use of chemical welding **Evaluate skills** ○ Testing of the designs ○ Reflection of designs ○ Consideration of modifications **Technical knowledge:** *(broadening)* 6. Plastics (Part 1-Properties and classification) 7. CAD CAM 8. Scales of production 9. Quality control 10. The work of others: Exploration of influential designers		<u>Structures</u> The development of a range of key skills through focused practical tasks to develop core skills and support learning of key technical knowledge. **Investigate skills** *(broadening)* 11. Researching structures 12. Product analysis 13. Understanding specifications+ **Analyse skills** *(developing)* ○ Explaining and annotating work ○ Consideration of a specifications+ ○ Considering the views of others+ **Evaluate skills** *(developing)* ○ Testing of a product+ ○ Reflection of the success of a product+ **Technical knowledge:** *(broadening)* 14. Structures and forces 15. Metals (Part 1-Properties and classification) 16. The work of others: Exploration of influential designers	<u>Branding</u> The development of a range of key skills throughout a project to develop core skills and support learning of key technical knowledge. **Design skills** *(developing)* ○ Communicating and presenting design ideas+ ○ Creating distinct ideas+ ○ Drawing and line quality+ ○ 2D and 3D drawing+ ○ Enhancement techniques+ ○ Rendering+ **Development skills** *(developing)* 17. Problem solving and annotation+ 18. Designing to scale and within specified tolerances+ 19. CAD image enhancement skills+ **Realise skills** *(broadening)* ○ Skill while using drawing equipment for the final design ○ Skill while rendering for the final design **Technical knowledge:** *(broadening)* ○ Papers and boards (Part 1-Properties and classification) ○ Colour theory and branding ○ The work of others: Exploration of influential designers.
Assessment	1. Base line test 2. Key Folder work **(documented in online/ A4 folders)** • Research • Design ideas • Analysis of work		3 Key Folder work **(documented in online/ A4 folders)** 20. Development of the maze & evaluative comments 21. The manufactured maze 22. Final evaluation		4. The work of others assessment 5. Key Folder work **(documented in online/ A4 folders)** • Research and analysis of structures • The recording of the testing of structures • Evaluative comments	
Enrichment and extension	The Knatch Bacc in DT: Students will be given optional monthly challenges that will extend and stretch their Design and Technology Curriculum. It will include wider reading activities, research tasks and activities that inspire and encourage a natural curiosity about the world around them and seek to show how Design and Technology effects all areas of their life.					

NKS Design & Technology Curriculum Map 2021 Year 8

Our Y8 curriculum builds on and extends the work done in Y7 by…

In year 8 students get the chance to work with a range of materials and processes including wood, plastics, graphics, electronics and Computer Aided Design in their project-based learning building on the skills developed in year 7. They will explore the environment of a workshop and its machinery. They will produce more complex working outcomes with greater independence and build on and develop skills each year in preparation for year 9. We will encourage the students to become ethical and responsible designers who are aware of the impact that products have on the wider world and exploring a range of cultural and historical influences. They will develop and broaden the 6 core skills: **Investigate, Design, Develop Realise, Analyse, Evaluate and use of technical knowledge.**. Then challenging students with more complex tasks that require prior learning and skills / material base. Greater awareness of Health and Safety issues and how to minimise risk to themselves and others (PPE / specific equipment)

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	<u>Monster Desk Tidy:</u> A project where the students design and realise a desk tidy with acrylic inserts to introduce them to workshop practices and tools & equipment which supports the learning of technical knowledge. **Investigate skills** *(revisiting and developing)* ○ Exploring a task in detail+ ○ Exploring themes+ ○ Analysis of research+ ○ Writing specifications+ **Design skills** *(revisiting and developing)* ○ Communicating and presenting design ideas using alternative techniques++ ○ Creating distinct ideas++ ○ Variety of enhancement techniques++ **Analyse skills** *(revisiting and developing)* ○ Explaining and annotating work+ ○ Consideration of a specifications++ ○ Considering the views of others++ **Realise skills** *(revisiting and developing)* ○ Safe workshop practice+ ○ Demonstrating skill when using tools+ ○ Demonstrating skill while finishing ○ Assembly of a product + **Evaluate skills** *(revisiting and developing)* ○ Testing of the designs++ ○ Reflection of designs++ ○ Consideration of modifications+ **Technical knowledge:** *(developing & broadening)* ○ Introduction to woodwork workshop tools and equipment ○ Timbers (Part 2-Uses and manufacturing processes) ○ Plastics (Part 2-Uses and manufacturing processes) ○ Mechanics (Part1-Forces)		<u>Aluminium Light:</u> A project where the students design and realise an aluminium light to introduce them to workshop practices and tools and equipment which supports the learning of key technical knowledge. **Development skills** *(developing & broadening)* ○ Problem solving and annotation++ ○ Modelling to test a design ○ Designing to scale and within specified tolerances+ ○ Planning a final design ○ Creating instructions for making a product. **Realise skills** *(developing & broadening)* ○ Safe workshop practice++ ○ Demonstrating skill when using tools (metals & soldering)++ ○ Demonstrating skill while finishing (metals)+ ○ Assembly of a product ++ **Evaluate skills** *(developing & broadening)* ○ Testing of the designs+++ ○ Reflection of designs+++ ○ Consideration of modifications++ **Technical knowledge:** *(developing & broadening)* ○ Cultural influences-Charles and Ray Eames ○ Metals (Part 2-Uses and manufacturing processes) ○ Nets, tessellation of shapes. ○ Using jigs and templates. ○ Soldering electronic components ○ Iterative design process		<u>Passive amplifier:</u> A sustainable design project where the student design a passive amplifier CAD CAM project to develop a wider range of skills and support learning of key technical knowledge. **Investigate skills** *(developing & broadening)* ○ Exploring a task in detail++ ○ Exploring themes++ ○ Analysis of research++ ○ Writing specifications++ **Design skills** *(developing & broadening)* ○ Communicating and presenting design ideas using alternative techniques++ ○ Creating distinct ideas++ ○ Variety of enhancement techniques++ ○ Orthographic drawing ○ Use of CAD **Analyse skills** *(developing & broadening)* ○ Explaining and annotating work++ ○ Consideration of a specifications+++ ○ Considering the views of others+++ **Development skills** *(developing & broadening)* ○ Problem solving and annotation+++ ○ Modelling to test a design + ○ Designing to scale and within specified tolerances++ ○ Planning a final design+ ○ Creating instructions for making a product.+ **Technical knowledge:** *(developing & broadening)* ○ Sustainability and ethics (Part 2) ○ Papers and boards (Part 1- Uses and manufacturing processes) ○ The use of CAD/CAM	
Assessment	1. Technical knowledge assessment 2. Key Folder work **(documented & presented in online/ A4 folders)** • Research analysis and specifications • Design ideas evaluative comments & analysis • The Quality of the final product • Final evaluation		3. Key Folder work **(documented & presented in online/ A4 folders)** • Development & modelling of the iterative design process. • Realisation of final design and Evaluation		4. Key Folder work **(documented & presented in online/ A4 folders)** • Research analysis and specifications • Design ideas evaluative comments & analysis • Development & modelling of the iterative design process. • Realisation of final design and Evaluation 5. End of year technical knowledge assessment	
Enrichment and extension	The Knatch Bacc in DT: Students will be given optional monthly challenges that will extend and stretch their Design and Technology Curriculum. It will include wider reading activities, research tasks and activities that inspire and encourage a natural curiosity about the world around them and seek to show how Design and Technology effects all areas of their life.					

NKS Design & Technology Curriculum Map Year 9

Our Y9 curriculum builds on and extends the work done in Y8 by

Using the foundation of skills built in year 7 and 8, students continue to develop and broaden their knowledge and understanding through a more holistic and iterative approach which is less linear in the GCSE course. Any gaps created by COVID & for high mobility learners are highlighted and filled.

It prepares students for the GCSE programme and beyond by

Units are sequenced to cover he AQA specification and the 6 core GCSE assessment areas. It also provides a solid foundation of transferrable skills and subject specific experience to support student development. We specifically work through the skills within each assessment objective and develop these at a developing and secure level. There is opportunity for staff and student reflection as skills are developed and secured to adjust the time needed to be spent on each area.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	<u>Skills sticks</u> A foundation of a range of key skills through focused practical tasks to develop core skills and support learning of key technical knowledge. **Communication skills (documented in online and A3 folders):** ○ Communicating and presenting design sheets ○ Isometric drawing ○ Modelling in 3D CAD (Onshape) ○ Formal engineering drawings ○ Analysis of a product ○ Presenting research **Practical skills: (physical outcomes)** ○ Safe workshop practice with a wide range of hand tools and machinery ○ Experience in working in timber, plastic and metal through the creation of a set of skills sticks ○ Marking out and cutting with appropriate tools and equipment in timber, plastic and metal. ○ Forming, shaping and bending timber, plastic and metal ○ Joining (permanent and temporary) and finishing of timbers, plastics and metals ○ The use of production aids, tolerance and material management. **Technical knowledge (documented in exercise books):** • Unit-3-Materials-and-their-working-properties • Unit-5B-Timber-based-materials • Unit 5D Polymers • Unit 4.5 Scales of production • Unit 7-Making Principles			<u>Pewter Casting</u> A project where the student design a key ring/ pendant with acrylic inserts and cast in pewter to develop a wide range of skills and support learning of key technical knowledge. **Communication skills (documented in online and A3 folders):** ○ Using a source of inspiration (biomimicry) ○ Problem solving ○ Using a specification ○ Creating distinct ideas ○ Designing for client ○ Modelling in 2D CAD to design a mould (TechSoft2D) ○ Communication and annotation of the development of a design ○ Developing Modelling in 3D CAD using (Techsoft) and (Onshape) **Practical skills: (physical outcomes)** ○ Developing safe workshop practice with a wider range of hand tools and machinery + ○ Casting metals (pewter) ○ The use of CAM to create MDF moulds (laser cutter) ○ Cardboard testing and modelling ○ Developing skills Cutting, shaping and finishing cast metal. + ○ Developing skills cutting and keying in acrylic + ○ Designing and assembling a mould ○ Material properties acrylic and pewter **Technical knowledge (documented in exercise books):** ○ Unit-5C-Metal-based-materials ○ Unit-5A-Papers-and-boards	<u>Bug Hotel/ Planter</u> A foundation of a range of key skills through focused practical tasks to develop core skills and support learning of key technical knowledge. **Communication skills (documented in online and A3 folders):** ○ Primary investigations and communication ○ Using a source of inspiration + ○ Two-point perspective drawing ○ Using/ creating a Specification + ○ Range of strategies to developing Idea + ○ Evidencing the development of a design + ○ Developing Modelling in 3D CAD using (TechSoft) and (Onshape) ++ ○ Annotation and evaluation + ○ Evidence of manufacture. **Practical skills: (physical outcomes)** ○ Developing safe workshop practice with a wider range of hand tools and machinery ++ ○ Developing skills using CAM to create acrylic/ plywood stands (laser cutter sheet material) + ○ Develop cardboard testing and modelling skills ++ ○ Develop and draw on key practical skills and knowledge from term 1-4 to solve problems and design solutions. ++ ○ Develop the use of production aids, tolerance and material management++ **Technical knowledge (documented in exercise books):** ○ Unit 2.1 & 2.2 Energy generation and storage. ○ Unit 2.3-2.5 Modern smart and composite materials. ○ Unit 4.3 & 4.4 -Ecological Footprints and the 6Rs ○ Maths in DT	
Assessment	1. Folder work documenting communication skills and practical work assessment focusing on the following skills: ○ Modelling (D) ○ Evaluation (F) ○ Realisation (E) 2. End of unit assessment: • Unit 5B Timbers • Unit 5D Polymers			3. Folder work documenting communication skills and practical work assessment focusing on the following skills: • Investigation (A) • Developing Ideas (C) • Evidence of manufacture. (E)+ • Evaluation (F) 4. End of unit assessment: • Unit 5C Metal • Unit 5A Papers and boards	5. Folder work documenting communication skills and practical work assessment focusing on the following skills: • Investigation (A)+ • Specification • Developing Ideas (C)+ • Evidence of manufacture. (E)++ • Evaluation & analysis (F)+ 6. End of unit assessment: • Unit 3 Materials and their working properties • Unit 2 Energy, materials assessment	
Enrichment and extension	○ Monthly optional design challenge to stretch and challenge. ○ Live trips will be COVID restriction dependant. Virtual trips e.g. Young Designers exhibition and activities to take place. ○ Optional External competition through the Design Museum London, Designing for a live brief to developing and realise a design					

NKS Design & Technology Curriculum Map Year 10

Our Y10 curriculum builds on and extends the work done in Y9 by

The skills developed in are used to build more coherent projects that draw on previous knowledge, understanding & experience to solve more complicated design problems, and successfully communicate the process, showcasing knowledge.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	Multimedia Clock Project Students draw on knowledge and skills from year 9 in a Multimedia Clock Project inspired by architects: Zaha Hadid & Thomas Heatherwick. Skills are revisited, consolidated with more independence and a wider range of skills are developed. This is also supported by learning of key technical knowledge. **Communication skills (documented in online and A3 folders):** ○ Using a source of inspiration (cultural influences) +++ ○ Problem solving + ○ Creating a specification + ○ Creating distinct ideas + ○ Using a range of design strategies and communication techniques++ ○ Designing for client + ○ Communication and annotation of the development of a design + ○ Planning the manufacture of a product ○ Developing Modelling in 3D CAD using (Techosft) and (Onshape) + **Practical skills: (physical outcomes)** ○ Continue to develop and consolidate safe workshop practice with a wider range of hand tools and machinery +++ ○ Developing and consolidating skills using CAM to create acrylic/ plywood stands (laser cutter sheet material) ++ ○ Develop and consolidate cardboard testing and modelling skills +++ ○ Develop and draw on key practical skills and knowledge from year 9 to solve problems and design solutions. +++ ○ Develop the use of production aids, tolerance and material management.++ ○ Experience in working in wood, with the option of plastic and metal through the creation of clock ○ Marking out, cutting and bending with appropriate tools and equipment.+ ○ Joining and finishing of timbers with the option of plastics and metals + ○ The use of production aids, tolerance and material management to follow own plan **Technical knowledge (documented in exercise books):** • Unit-3-Materials-and-their-working-properties (REVISIT) • Unit 4.1 & 4.2 Forces, Stresses, functionality • Unit 7-Making Principles (REVISIT) • The work of others (START)		Designer Light Project: Students draw on knowledge and skills from year 9&10 in a Multimedia angle poise Lamp Project inspired by the investigation and knowledge of designer/s: Rossie, Mackintosh, Sottsass, Reitvweld, Beck, Bruer, Foster, Starck, Templier or Issignois. Skills are revisited, consolidated with more independence and a wider range of skills are developed to provide a sound foundation for the independence of their NEA. This is also supported by learning of key technical knowledge. **Communication skills (documented in online and A3 folders):** ○ Analysing existing products+ ○ Using a source of inspiration (cultural influences) ++++ ○ Problem solving ++ ○ Creating a specification ++ ○ Creating distinct ideas ++ ○ Using a range of design strategies and communication techniques+++ ○ Designing for client ++ ○ Communication and annotation of the development of a design ++ ○ Planning the manufacture of a product+ ○ Developing Modelling in 3D CAD using (Techosft) and (Onshape) + **Practical skills: (physical outcomes)** ○ Continue to develop and consolidate safe workshop practice with a wider range of hand tools and machinery ++++ ○ Developing and consolidating skills using CAM to create acrylic/ plywood stands (laser cutter sheet material) +++ ○ Develop and consolidate cardboard testing and modelling skills ++++ ○ Soldering and the use of electronic components ○ Develop and draw on key practical skills and knowledge from year 9 &10 to solve problems and design solutions. ++++ ○ Develop the use of production aids, tolerance and material management.++ ○ Experience in working in wood, with the option of plastic and metal through the creation of clock ○ Marking out, cutting and bending with appropriate tools and equipment.+ ○ Joining and finishing of timbers with the option of plastics and metals + ○ The use of production aids, tolerance and material management to follow own plan **Technical knowledge (documented in exercise books):** ○ Unit 1-New and Emerging Technologies ○ Unit 5F- Electronic Systems ○ Unit 2.6-2.8 Systems/ Electronic approach to designing & mechanical devices. ○ Unit 7-Making Principles (REVISIT) ○ The work of others ○ Maths in DT		NEA Project: Context from AQA Students use skills developed to explore and investigate a context for their independent project. Section A of NEA. NEA context released by AQA. **Key work:** ○ Folder layout A3 ○ Investigation ○ Primary Client research and analysis. ○ Research plan ○ Primary investigation ○ Secondary Investigation ○ Social Moral and Economic influences ○ Summary and analysis of research gathered **Technical knowledge (documented in exercise books):** ○ REVISITING AREAS HIGHLIGHTED IN THE YEAR 10 PPE
Assessment	1. Folder work documenting communication skills and practical work assessment focusing on the following skills: ○ **Investigation (A) 10 marks** ○ **Specification (B) 10 marks** ○ **Generating Design Ideas (C) 20 marks** ○ **Developing Ideas (D) 20 marks** ○ **Realising design ideas (E) 20 marks** ○ **Evaluation & analysis (F) 20 marks** 2. End of unit assessment: • Unit 4 common specialist technical principles • Unit 6 designing principles • Unit 7 Making principles		3.Folder work documenting communication skills and practical work assessment focusing on the following skills: ○ **Investigation (A) 10 marks** ○ **Specification (B) 10 marks** ○ **Generating Design Ideas (C) 20 marks** ○ **Developing Ideas (D) 20 marks** ○ **Realising design ideas (E) 20 marks** ○ **Evaluation & analysis (F) 20 marks** 4. End of unit assessment: ○ Unit 1 New and emerging technologies ○ Unit 5F- Electronic Systems ○ **Year 10 PPE**		5. Online Folder work documenting progress and Interim deadlines for: SECTION A 6. Any re-takes of year 10 PPE
Enrichment and extension	**Extra Curriculum -** Monthly optional design challenge to stretch and challenge. Live trips will be COVID restriction dependant. Virtual trips e.g. Young Designers exhibition and activities to take place. Additional after school workshops.					

NKS Design & Technology Curriculum Map 2021 Year 11

Our Y11 curriculum builds on and extends the work done in Y10 by

Bringing together the skills and knowledge from previous years to complete the Non Exam Assessment (NEA). This is a large independent project that the students complete within a given context from AQA. Gaps in the Technical knowledge are identified, and units revisited to secure learning and understanding. This builds a good foundation of skill in the key areas for future studies.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	<u>NEA Project section B&C</u> Based on conclusions from their investigations students will outline design possibilities by producing a design brief and design specification. Using a variety of communication techniques Students should explore a range of possible ideas linking to the contextual challenge selected. These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. **Key work** ○ Research summary ○ Design Brief & Specification ○ Initial design ideas **Technical knowledge (documented in exercise books):** REVISITING AREAS HIGHLIGHTED IN THE YEAR 10 PPE	<u>NEA Project section D</u> Students will develop and refine design ideas through the iterative process. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, models and schedules. Students will develop at least one model, and variety of different strategies to a final design. Manufacturing specifications are created. **Key work** ○ Recording of the design development ○ CAD modelling ○ CAM modelling ○ Testing ○ Manufacture specification ○ Cutting List **Technical knowledge (documented in exercise books):** Teacher to identify areas of knowledge gaps with individual classes.	<u>NEA Project section E</u> Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate. **Key work:** ○ Manufacture of prototype ○ Evidence of manufacture / diary of making **Technical knowledge (documented in exercise books):** REVISITING AREAS HIGHLIGHTED IN THE YEAR 11 PPE	<u>NEA Project Section F</u> Their final prototype(s) will also undergo a range of tests on which the final evaluation will be formulated. This should include market testing and a detailed analysis of the prototype Criteria F; Analysing and Evaluating **Key work:** ○ Client testing product ○ Commercial manufacture ○ Test against specification ○ Suggested modifications and improvements **Technical knowledge (documented in exercise books):** ○ REVISITING AREAS HIGHLIGHTED IN THE YEAR 11 PPE and other assessments **DEADLINE MARCH 1st 2023**	**Technical knowledge (documented in exercise books):** Revision of key units based on Teacher observations & needs of groups. **Revision Techniques** **Exam strategies**	**<u>STUDY LEAVE</u>**
Assessment	1. Folder work documenting communication skills and practical work assessment focusing on the previous core skills to complete: SECTION B & C 2. Assessments of key units based on Teacher observations & needs of groups.	3. Folder work documenting communication skills and practical work assessment focusing on the previous core skills to complete: SECTION D 4. Year 11 PPE	5. Folder work documenting communication skills and practical work assessment focusing on the previous core skills to complete: SECTION E 6. Assessments of key units based on Teacher observations & needs of groups.	7. Folder work documenting communication skills and practical work assessment focusing on the previous core skills to complete: SECTION F 8. Assessments of key units based on Teacher observations & needs of groups.	Assessments of key units based on Teacher observations & needs of groups.	GCSE EXA M
Enrichment and extension	**Extra Curriculum -** Monthly optional design challenge to stretch and challenge. Live trips will be COVID restriction dependant. Virtual trips e.g. Young Designers exhibition and activities to take place. Tuesday After school workshops.					

NKS Design & Technology Curriculum Map 2021 Year 12

Prior to commencing A Level students will have studied

In most cases, student come to the A level course with GCSE AQA Design Technology with a Product Design focus. We also consider high mobility external students' study with a textiles or graphics background. On occasion a student will have studied a different exam board if from out of area or has not taken the subject at GCSE.

An understanding of students' starting points is achieved by…

Baseline assessment through skills project and a base line assessment / GCSE paper.

Our Y12 curriculum builds on and extends this by…

Teaching through a variety of skills-based projects to promote confidence in innovative thinking and communication skills. The key skills from KS3 & 4 are used as the foundations for all this work These projects vary depending on the needs of the cohort as different student from different schools may have different needs. These are audited at the beginning of year 12. Having a material and process focus to each project that put theory of material properties and processes into practices. Exam questioning, background reading and theory lessons are used for the development of technical knowledge. Order of theory topics may vary depending on projects studied and cohort. Students are issued with a PLC to help track progress.

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	**Designing and making principles** are taught through a variety of skills-based projects. These projects vary depending on the needs of the cohort as different student from different schools may have different needs. These are audited at the beginning of year 12. (3.2) <u>Base line Skills projects</u> A variety of small projects and activities to assess to level of skills including: • Product Study • Sketching and concept design • Practical skills with wood, metal and plastic • Designers and influences of others <u>Mini Projects to cover gaps in knowledge from baseline skills:</u> ○ Example 1: Unto this Last A project with the focus on investigation, communication methods, development, the use of CAD CAM and analysis to develop ideas for a London furniture shop ○ Example 2: Bottle Opener/ cuff links A FPT or project with the focus on investigation, realisation experience and skills with metals and brazing/ casting to create a bottle opener or cuff links for a client. ○ Example 3: Desk light Design inspired light to explore the wok of others, electronic components, portfolio presentation techniques & multi-material projects. **Technical knowledge (documented in students ring binders)** **3.1 Technical principles** ○ 3.1.1 Materials and their applications ○ 3.1.2 Performance characteristics of materials ○ 3.1.3 Methods of joining and use of components ○ 3.1.4 The use of finishes ○ 3.1.5 Enhancement of materials ○ 3.1.6 Modern industrial and commercial practice			**Designing and making principles** are taught through a continuation of a variety of skills-based projects and focus on key areas of the curriculum. (3.2) <u>Mini Projects to cover gaps in knowledge from baseline skills:</u> ○ Example 4: Inclusive Design A Client focused project looking at Anthropometrics, ergonomics and usability which develops and broadens modelling. ○ Example 5: Testing A report and series of material testing activities ○ Example 6: Sustainable design A project based on reduce, re-use recycle. <u>NEA preparation</u> Exploration of possible contexts for the NEA. Students will explore a variety of different themes are look for potential problems that could be the basis for their NEA. **Technical knowledge (documented in students ring binders)** **3.1 Technical principles** 3.1.6 Modern industrial and commercial practice 3.1.7 Digital design and manufacture 3.1.8 The requirements for textile and fashion design and development 3.1.9 Health and safety 3.1.10 Protecting designs and intellectual property 3.1.11 Design for manufacturing, maintenance, repair and disposal 3.1.12 Feasibility studies 3.1.13 Enterprise and marketing in the development of products 3.1.14 Design communication		<u>NEA</u> ○ Investigate context: Students will plan and carry out an extensive investigation into all aspects of the context in order that they might operate from a position of knowledge. The students will be expected to employ a variety of both primary and secondary methods of investigation. These might include visits organised by themselves or others, surveys and questionnaires could be used to inform. Useful and relevant material can be gained from others via the internet, books, magazines or interviews. Students should also be encouraged to undertake, where relevant, practical experimentation and disassembly as methods for further understanding and exploring the context and its related issues **Technical knowledge (documented in exercise books):** Any areas highlighted in PPE and assessments.
Assessment	1. Folder work documenting the mini projects, communication skills and practical work assessment. Assessed using selected relevant & adapted A level criteria. (Online and in A3 folders) 2. Assessments of key topics through examination questions and tests, based on Teacher observations & needs of groups. (student ring binders)			3. Folder work documenting the mini projects, communication skills and practical work assessment. Assessed using selected relevant & adapted A level criteria. (Online and in A3 folders) 4. Year 12 PPE and Assessments of key topics through examination questions and tests, based on Teacher observations & needs of groups. (student ring binders)		5. Informal assessment and whole class feedback of NEA work.
Enrichment and extension	**Extra Curriculum -** Study support lessons and "open door" option for KS4 where students can come and work in department. Background reading into areas of interest. KS4 prefect lessons Possible trips to BMW Mini (Oxford factory) New Designers Exhibition, London, MJ Allen, Ashford, Design museum, London.					

NKS Design & Technology Curriculum Map 2021 Year 13

Our Y13 curriculum builds on and extends the work done in Y12 by…

Allowing students to select a client based context that will allow them to showcase their design, communication and manufacturing skills to the highest level.

This is interleaved with theory elements. Once the NEA is complete an intense 10 point revision approach targets revision with a diagnostic approach

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Content – Knowledge and Understanding **Skills and concepts**	NEA ○ **Initial concepts:** Students will begin to explore their thinking on possible solutions by producing concept ideas that take into account the information collected ○ **Produce a design brief and specification:** The student is required to produce a clearly stated and challenging design brief that addresses the context and meets the needs of the intended user(s). The student should formulate a fully detailed design specification that is informed by their investigations and makes full use of the material collated ○ **Development of a design proposal:** Design proposals should reflect on first concepts and take full account of the design brief and design specification. The aim should be that the development of their design proposal(s) leads to a prototype that can be manufactured by the student given their skills and experience. In developing their proposals the student will be expected to make constant reference to their design brief and design specification, to identify if further investigations are required and to carry these out. Design proposals can be demonstrated through a variety of different media, but whatever methods are chosen, they should be of a high quality befitting this level of qualification and show evidence of analysis and annotation (although these elements are not assessed in this assessment criteria). Modelling is seen as a key element. There is also the expectation that students will produce working drawings, plans and patterns to enable successful prototype manufacturing to take place. The use of CAD is encouraged, but this should not be the only form of design communication that is used. ○ **Development of a design prototype**: It is expected that the student will demonstrate their practical skills to a high level using all of the potential resources, tools, machines and equipment at their disposal. During the development of their design prototype(s) the student should be encouraged to continue to experiment and adapt their design proposals as they progress. Constant testing and evaluation is expected to form part of this process. ○ **Analysis and Evaluation:** Students should be encouraged to be constantly analysing their work and recording their thoughts in order to explain their thinking. Ongoing evaluation should be seen to be informing the decision-making process, particularly being used to bring about modifications to design proposals and prototype development. Central to this is the close and regular involvement of the proposed client/user(s) making sure that the prototype is both fit for purpose and meets the requirements of the client/user(s) rather than just meeting those of the student. **Technical knowledge (documented in students ring binders):** **3.1 Technical principles** Great depth into the technical principles touched on in year 12 **3.2 Designing and making principles** 3.2.1 Design methods and processes 3.2.2 Design theory 3.2.3 How technology and cultural changes can impact on the work of designers 3.2.4 Design processes 3.2.5 Critical analysis and evaluation 3.2.6 Selecting appropriate tools, equipment and processes 3.2.7 Accuracy in design and manufacture 3.2.8 Responsible design 3.2.9 Design for manufacture and project management 3.2.10 National and international standards in product design				**Technical knowledge** Revision of key units based on Teacher observations & needs of groups. **Revision Techniques** **Exam strategies**	**STUDY LEAVE**
Assessment	1. Informal assessment and whole class feedback of NEA work at set intervals. **(Documented in online PowerPoint presentation)** 2. Assessments of key topics through examination questions and tests, based on Teacher observations & needs of groups. **(Documented in students ring binders)**					A LEVEL EXAMINATIONS
Enrichment and extension	**Extra Curriculum -** Study support lessons and “open door” option for KS4 where students can come and work in department. Background reading into areas of interest. KS4 prefect lessons					