DESIGN & TECHNOLOGY

CURRICULUM PLAN

KS3 & KS4

The Rudheath
Senior Academy

Department for Education

DESIGN & TECHNOLOGY
KS3 NATIONAL CURRICULUM

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Attainment targets

By the end of key stage 3, pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study.

Schools are not required by law to teach the example content in [square brackets].

Subject content

Key stage 3

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

When designing and making, pupils should be taught to:

Design

- use research and exploration, such as the study of different cultures, to identify and understand user needs
- identify and solve their own design problems and understand how to reformulate problems given to them
- develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

- 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

Evaluate

- analyse the work of past and present professionals and others to develop and broaden their understanding
- investigate new and emerging technologies
- test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists

Technical knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force
- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
- apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].

Department for Education

DESIGN & TECHNOLOGY
KS4 NATIONAL CURRICULUM

Aims and objectives

4. The study of design and technology seeks to prepare students to participate confidently and successfully in an increasingly technological world; and be aware of, and learn from, wider influences on design and technology, including historical, social/cultural, environmental and economic factors. GCSE design and technology specifications must enable students to work creatively when designing and making and apply technical and practical expertise, in order to:

- demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice
- develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values
- use imagination, experimentation and combine ideas when designing
- develop the skills to critique and refine their own ideas whilst designing and making
- communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing
- develop decision making skills, including the planning and organisation of time and resources when managing their own project work
- develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes
- be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses
- consider the costs, commercial viability and marketing of products
- demonstrate safe working practices in design and technology
- use key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics

Subject content

5. GCSE specifications in design and technology[2] must require students to demonstrate the necessary knowledge, understanding and skills required to undertake iterative design processes of exploring, creating and evaluating. Specifications must require students to demonstrate the mathematical and scientific knowledge, understanding and skills set out in appendix 1.

6. The knowledge, understanding and skills that all students must develop have been separated into:

- technical principles
- designing and making principles

7. Specifications must require students to produce at least one final made prototype based on a design brief they develop in response to a contextual challenge set by Awarding Organisations. When completing their project students will apply designing and making principles and their knowledge and understanding of technical principles.

8. Specifications should provide a range of broad and contemporary contextual challenges, which provide a basis from which students can undertake a design, make and evaluate project. Contextual challenges must:

- offer a broad range of real-world contexts, representing contemporary issues and concerns
- be open-ended, avoiding predetermining the materials or processes to be used to achieve a design solution
- focus on needs, wants and values of individuals and groups, leading students to address problems and/or opportunities
- be accessible and relevant to the full range of design and technology materials and components outlined in section 9

Technical principles

9. In order to make effective design choices in relation to which materials, components and systems to utilise, students will need a breadth of technical knowledge and understanding that includes:

- the impact of new and emerging technologies on industry, enterprise, sustainability, people, culture, society and the environment, production techniques and systems
- how the critical evaluation of new and emerging technologies informs design decisions, considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment
- how energy is generated and stored in order to choose and use appropriate sources to make products and to power systems
- developments in modern and smart materials, composite materials and technical textiles
- how electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs
- the use of programmable components to embed functionality into products in order to enhance and customise their operation
- the functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces
- the categorisation of the types and properties of the following materials:
  - papers and boards
  - natural and manufactured timber
  - ferrous and non-ferrous metals
  - thermoforming and thermosetting polymers
  - natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles

In addition, when designing and making[3] (in relation to at least one of the material categories outlined in bullet 8 or the components and systems outlined in bullets 6-7, above) students should develop an in-depth knowledge and understanding of:

- the sources, origins, physical and working properties of the material categories or the components and systems, and their ecological and social footprint
- the way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical
- the impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened
- stock forms, types and sizes in order to calculate and determine the quantity of materials or components required
- alternative processes that can be used to manufacture products to different scales of production
- specialist techniques and processes that can be used to shape, fabricate, construct and assemble a high quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used
- appropriate surface treatments and finishes that can be applied for functional and aesthetic purposes

Designing and making principles

10. GCSE specifications in design and technology must require students to:

- understand that all design and technological practice takes place within contexts which inform outcomes
- identify and understand client and user needs through the collection of primary and secondary data
- demonstrate an ability to write a design brief and specifications from their own and others' considerations of human needs, wants and interests
- investigate factors, such as environmental, social and economic challenges, in order to identify opportunities and constraints that influence the processes of designing and making
- explore and develop their ideas, testing, critically analysing and evaluating their work in order to inform and refine their design decisions thus achieving improved outcomes
- investigate and analyse the work of past and present professionals and companies in the area of design and technology in order to help inform their own ideas
- use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation
- develop, communicate, record and justify design ideas, applying suitable techniques, for example: formal and informal 2D and 3D drawing; systems and schematic diagrams; annotated sketches; exploded diagrams; models; presentations; written notes; working drawings; schedules; audio and visual recordings; mathematical modelling; computer-based tools
- design and develop at least one prototype that responds to needs and/or wants and is fit for purpose, demonstrating functionality, aesthetics, marketability and consideration of innovation[4]
- make informed and reasoned decisions, respond to feedback about their own prototypes (and existing products and systems) to identify the potential for further development and suggest how modifications could be made

In relation to at least one of the material categories listed in paragraph 8 (above), students are required to develop and apply in-depth knowledge by:

- selecting and working with appropriate materials and components in order to produce a prototype
- using appropriate and accurate marking out methods including: measuring and use of reference points; lines and surfaces; use templates, jigs and/or patterns; work within tolerances; understand efficient cutting and how to minimise waste
- using specialist tools and equipment, appropriate to the materials or components used (including hand tools, machinery, digital design and manufacture), to create a specific outcome
- using specialist techniques and processes to shape, fabricate, construct and assemble a high quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used
- using appropriate surface treatments and finishes for functional and aesthetic purposes

CURRICULUM PLAN						
Year	Autumn		Spring		Summer	
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
7	Cultural Capital Project: climate change, fossil fuels	Cultural Capital Project: renewables and deforestation	Cultural Capital Project: plastic pollution	Cultural Capital Project: product production	Cultural Capital Project: textiles	Cultural Capital Project: Exhibition
8	Textiles	Shibori & Sashiko	Innovate Renew	Tin can light	Architecture	Shipping containers
9	Engineering	Earthquake proof	Innovate Renew	Electronics	Innovate Move	Textiles
10 D&T	Mini NEA Outdoor living	Mini NEA Children's learning & play	Mini NEA Surviving an emergency	Mini NEA Nature & The environment	Mini NEA Teenage Lifestyle	NEA
11 D&T	NEA	NEA	Materials & their properties	Enterprise and energy	Revision	
11 BTEC	Unit 1 Construction technology	Unit 1 Construction technology	Unit 3 Construction and Design	Unit 3 Construction and Design	Revision	

Design and Technology Progression Framework – NC2014 PoS – Coded Objectives

	Lower KS3	Upper KS3	Across KS3
DA - DESIGNING Understanding contexts, users and purposes	**DA 1** - develop detailed design specifications to guide their thinking **DA 2** - use research including the study of different cultures, to identify and understand user need **DA 3** - identify and solve their own design problems	**DA 4** - develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety **DA 5** - research the health and wellbeing, cultural, religious and socio-economic contexts of their intended users **DA 6** - understand how to reformulate design problems given to them	**DA 7** - work confidently within a range of relevant domestic, local and industrial contexts, such as the home, health, leisure, culture, engineering, manufacturing, construction, food, energy, agriculture and fashion **DA 8** - consider the influence of a range of lifestyle factors and consumer choices when designing products **DA 9** - take creative risks when making design decisions **DA10** - consider additional factors such as ergonomics, anthropometrics or dietary needs **DA 11** - analyse where human values may conflict and compromise has to be achieved
DB - DESIGNING Generating, developing, modelling and communicating ideas	**DB 1** - use 2D and begin to use 3D CAD packages to model their ideas **DB 2** - produce models of their ideas using CAM to test out their ideas	**DB 3** - use 3D CAD to model, develop and present their ideas **DB 4** - use CAD and related software packages to validate their designs in advance of manufacture	**DB 5** - use specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations **DB 6** - combine ideas from a variety of sources **DB 7** - use a variety of approaches, for example biomimicry and user-centred design, to generate creative ideas and avoid stereotypical responses **DB 8** - decide which design criteria clash and determine which should take priority **DB 9** - develop and communicate design ideas using annotated sketches **DB 10** - produce 3D models to develop and communicate ideas **DB 11** - use mathematical modelling to indicate likely performance before using physical materials and components, for instance when developing circuits or gearing systems **DB 12** - give oral and digital presentations and use computer-based tools

	Lower KS3	Upper KS3	Across KS3
MA - MAKING Planning	**MA 1** - produce ordered sequences and schedules for manufacturing products they design, detailing resources required **MA 2** - produce costings using spreadsheets for products they design and make	**MA 3** - create production schedules that inform their own and others' roles in the manufacturing of products they design **MA 4** - make simple use of planning tools, for instance Gant charts **MA 5** - communicate their plans clearly so that others can implement them **MA 6** - match and select suitable materials considering their fitness for purpose	**MA 7** - select appropriately from specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture **MA 8** - select appropriately from a wider, more complex range of materials, components and ingredients, taking into account their properties such as water resistance and stiffness
MB - MAKING Practical skills and techniques	**MB 1** - make use of specialist equipment to mark out materials **MB 2** - use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives **MB 3** - use CAD/CAM to produce and apply surface finishing techniques, for example using dye sublimation **MB 4** - investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials e.g. dying and appliqué	**MB 5** - adapt their methods of manufacture to changing circumstances **MB 6** - recognise when it is necessary to develop a new skill or technique	**MB 7** - follow procedures for safety and hygiene and understand the process of risk assessment **MB 8** - use a wider, more complex range of materials, components and ingredients, taking into account their properties **MB 9** - use a broad range of manufacturing techniques including handcraft skills and machinery to manufacture products precisely **MB 10** - exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality, scale of production and precision **MB 11** - apply a range of finishing techniques, including those from art and design, to a broad range of materials including textiles, metals, polymers and woods

	Lower KS3	Upper KS3	Across KS3
EA - EVALUATING Own ideas and products	**EA 1** - evaluate their products against their original specification and identify ways of improving them **EA 2** - actively involve others in the testing of their products	**EA 3** - select appropriate methods to evaluate their products in use and modify them to improve performance **EA 4** - produce short reports, making suggestions for improvements	**EA 5** - test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
EB - EVALUATING Existing products	**EB 1** - products through disassembly to determine how they are constructed and function **EB 2** - the positive and negative impact that products can have in the wider world	**EB 3** - products that they are less familiar with using themselves **EB 4** - products considering life cycle analysis **EB 5** - how products can be developed considering the concept of 'cradle to grave' **EB 6** - the concept of circular economy approaches in relation to product development and consumption	**EB 7** - new and emerging technologies
EC - EVALUATING Key events and individuals			**EC 1** - about an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their products to their own designing and making
TK - TECHNICAL KNOWLEDGE Making products work	**TK 1** - how to classify materials by structure e.g. hard words, soft woods, ferrous and non-ferrous, thermoplastic and thermosetting plastics **TK 2** - about the physical properties of materials e.g. grain, brittleness, flexibility, elasticity, malleability and thermal **TK 3** - how more advanced electrical and electronic systems can be powered and used in their products **TK 4** - how to use simple electronic circuits incorporating inputs and outputs **TK 5** - about textile fibre sources e.g. natural and synthetic and fabrics e.g. plain and woven **TK 6** - how to select and modify patterns and use in textile construction	**TK 7** - how materials can be cast in moulds **TK 8** - how to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines **TK 9** - how to apply computing and use electronics to embed intelligence in products that respond to inputs **TK 10** - make use of sensors to detect heat, light, sound and movement such as thermistors and light dependant resistors **TK 11** - how to apply the concepts of feedback in systems **TK 12** - how to control outputs such as actuators and motors **TK 13** - how to use software and hardware to develop programmes and transfer these to programmable components for example, microcontrollers **TK 14** - how to make use of microcontrollers in products they design and manufacture themselves **TK 15** - how to construct and use simple and compound gear trains to drive mechanical systems from a high revving motor	**TK 16** - use learning from science to help design and make products that work **TK 17** - use learning from mathematics to help design and make products that work **TK 18** - understand the properties of materials, including smart materials, and how they can be used to advantage **TK 19** - understand the performance of structural elements to achieve functioning solutions **TK 20** - understand how more advanced mechanical systems used in their products enable changes in movement and force **TK 21** - how to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment

KDO Year 7	Autumn		Spring		Summer	
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Project focus	Project overview and key vocab	What is climate change. How does it impact the 4 identified communities	Plastic pollution	Product production	Textile pollution	Product production and exhibition
Learning objectives	Understanding health and safety in the D&T rooms. Introduction to materials and equipment. Expectations, skills licence.	Communicating and developing design ideas. Learning about energy and renewables, timbers and deforestation	Learning origins and properties of polymers and environmental impact. Identifying client needs, wants and likes.	Learning to identify client needs, wants and likes. Adapting products for specialist needs.	Learning how textile production impacts climate.	Identifying and solving real and relevant design problems. Communicating design ideas for exhibition.
Key learning	Developing understanding of subject content	Developing a product using the iterative design process. Create a small scale timber product with a Christmas theme.	Students will learn about the present and future sustainability of plastics and how to communicate design ideas.	Students will learn about how everyday products can be modified to meet the needs of specific users.	Students will learn about the present and future sustainability of textiles.	Developing a product using the iterative design process.
Cross-Curricular	Science: health and safety All subjects: presentation of work, standards and expectations	History: timbers Maths: measuring Literacy: annotation Geography: climate change	Science: properties of materials Maths: data analysis Geography: import/export History: plastic industry Literacy: communication skills	Science: properties of materials. Literacy: communication skills Maths: anthropometric data, measurements	Maths: calculating material requirements, wastage and costs. Science: property materials.	Geography: energy poverty/climate Maths: measuring/data Literacy: reading/research
Skills	Responsibility Independence Learning how to use tools and equipment safely. Learning about the working and physical properties of different materials.	• Developing design ideas • Use of drawing and rendering skills • Understanding papers and boards and simple fixings.	New and emerging technologies Smart and new materials • Design approaches eg biomimicry • Develop and communicate design ideas	• Developing design ideas • Learning how to research effectively • Use of drawing and rendering skills	• Developing design ideas • Learning how to research effectively • Use of drawing and rendering skills	• Developing design ideas • Learning how to sketch in 3D • Recognition of basic electronic components • How to read a circuit diagram • Use of drawing and rendering skills
Assessment	Formative: Design sheets Summative written test	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative: Differentiated Starter Activities. Plenary - GCSE Exam Style Question.

KDO Year.7 – Intent, Implementation, Impact		
Autumn	Spring	Summer
Kitchen garden	Technical textiles	Touch torch
Intent: Core - Health & safety - User-centred design - Graphical skills Designing - DA1 - DA2 - DA7 - DA8 - DA10 - DA11 - DB6 - DB7 - DB9 Making - MA1 - MA2 - MA7 - MB1 - MB7 - MB8 Evaluation - EA1 - EA5 - EB2 Technical TK1 - TK2 - TK17 **Implementation:** - Follow procedures for safety and understand the process of risk assessment - Explore user-centred design - Key words and vocab - Design approaches - Practically demonstrating Key Words. - Baseline Assessment gain a better idea of student's prior knowledge. **Impact:** - Group Discussions to check understanding and address misconceptions. - Knowledge Drill; Verbal Feedback / Whiteboards. - Presentation of design ideas. - Baseline Assessment on students Prior	**Intent:** Core - Polumers - Environmental issues Designing - DA2 - DA3 - DA7 - DA8 - DA9 - DA11 - DB6 - DB7 - DB9 - DB12 Making - MA2 - MA7 - MB2 - MB7 - MB8 - MB9 - MB11 Evaluation - EA1 - EA5 - EB2 - EB7 - EC1 Technical - TK2 - TK4 - TK5 - TK6 **Implementation:** - Develop and communicate design ideas - Work as part of a team - Present design ideas - Explore a wider, more complex range of materials. - Knowledge Drill (Written Quiz on Key Words) **Impact:** - Designing within a context - Good communication skills during group discussions. - Responding to feedback that then improves upon their original product.	**Intent:** Core - Textiles - Understanding textiles and environmental issues Designing - DA1 - DA2 - DA7 - DA10 - DB5 - DB9 - DB10 - DB11 - DB12 Making - MA2 - MA7 - MB7 - MB10 Evaluation - EA1 - EA2 - EA5 - EB1 - EB2 Technical - TK1 - TK3 - TK4 - TK16 **Implementation:** - To learn about textiles - Learning through Quizzes, Knowledge Drills, Whiteboards, Kahoot, Questioning/Blooms. - Communicate design ideas - Knowledge Drill (Written Quiz on Key Words) **Impact**: - How to read, design and build a simple circuit - Graphics: developing ideas - Students can correctly identify key materials and equipment.

KDO Year 7 (Autumn half term 1) - Cultural capital project						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Climate change	What is a carbon footprint and how can we shrink it?	I can **identify** products that have been designed for specific users.	I can **show** my teacher how products have been manufactured.	I can **explain** why D&T is an important subject and what I will learn this term	I can **explain** why D&T is an important subject and give examples of future career opportunities
2	Exploring design problems	Energy sources: wind and geothermal (DA1 &2)	I can **identify** basic design opportunities	I can identify and **explore** basic design opportunities	I can identify and explore a **range** of design opportunities	I can **analyse** a design context
3	Exploring design problems	Energy sources: solar and hydro (DA1 &2)	I can **comment** on lifestyle factors and consumer choices	I can **discuss** and communicate effectively whilst working in a group	I can comment and **communicate** effectively whilst working in a group. I will usually lead my group.	I can **describe** and give examples of what lifestyle factors and consumer choices are.
4	Exploring design problems	Energy sources: kinetic and biomass (DA1 &2)	I find it **difficult** to visualise my ideas using sketching and annotation.	I can **roughly** sketch my ideas and annotate them.	I can **clearly** communicate my design ideas using sketching and annotation.	I can **clearly** communicate my **detailed** design ideas using sketching and annotation.
5	Communication	Communicating design ideas (MA1 & 2)	I can produce **basic** costings.	I can produce basic costings using a **spreadsheet**.	I can produce **detailed** costings using a spreadsheet.	I can produce **detailed** costings **and** planting rotations using spreadsheets

KDO Year 7 (Autumn Half Term 2) – cultural capital project						
	Title	**Lesson Objective (WALT)**	**Assessment Opportunities**			
			Bronze (1-2)	**Silver (3-4)**	**Gold (5-6)**	**Platinum (7+)**
1	Communicating design ideas	Creating design sheets (MB1, 7 & 8)	I can **describe** what a topographical survey is.	I can **identify** key elements of a topographical survey	I can create a **basic** topographical site survey.	I can **create** a **detailed** topographical site study.
2	Market place	communicating design solutions (TK1 & 2)	I can **test** the soil pH and temperature of the compost pile.	I can **explain** why the soil pH is important.	I can **explain** the decomposition process.	I can **communicate** effectively within a group and explain why testing the soil pH and understanding the decomposition process is important.
3	Reflection	Understand how to modify and adapt design ideas (DB6 & 7 & EA5)	I need **help** to make alterations to my original design.	I can **independently** make alterations to my original design.	I can **make** alterations to my original design, demonstrating my understanding of user-needs.	I can make **detailed** alterations to my original design demonstrating my understanding of user needs and site restrictions.
4	Presentation of design ideas	Produce Christmas themed product (DB9)	I need **help** with my presentation	My presentation is **neat** and I am able to work **confidently** and independently at times.	My presentation is **good** and I am consistently able to work confidently and **independently**.	My presentation is excellent and I am able to work confidently and independently at all times and **help others**.
5	Evaluation	Develop evaluation skills (EA5)	I need **help** to evaluate my design against the original specification	I **can** evaluate my design agains the original specification.	I **can** evaluate my design against the original specification and identify ways of improving it.	I can **evaluate** my work and share creative ideas and encouragement with other student's.

KDO Year 7 (Spring half term 1) - Cultural capital project						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Welcome /polymers know ledge quiz	Understand the environmental impact of polymers and ocean pollution	I can **identify** different textiles	I can **identify** different textile products.	I can **explain** how the textiles industry has changed the UK.	I can **explain** how the textiles industry has changed the UK and how it is continuing to change.
2	Origins and properties of polymers	Identify different polymers (DA2, 8, 10 & 11)	I find it **difficult** to identify different fibres.	I can **identify** different fibres and textiles.	I can **describe** the origins and properties of some textiles.	I can **describe** the origins and properties of a range of fibres and textiles.
3	6Rs	Understand methods of creating polymers (MB2, MB3, MB4)	I need **help** to tell the difference between weft and warp threads.	I **can** tell the difference between weft and warp threads.	I can give **examples** of woven fabrics.	I **can** describe when to use a bonded or a woven fabric.
4	Design approaches	Understand biomimicry and how nature influences design (DB6 & 7)	I can **comment** on how nature has influenced the designs.	I can **discuss** and communicate effectively whilst working in a group	I can comment and **communicate** effectively whilst working in a group. I will usually lead my group.	I can **describe** and give examples of how nature influences various designs/products.
5	Learning to look	Generating and communicating design ideas in polymers (DA1 & 2)	I need **help** to annotate a sketch.	I **can** annotate a sketch dependently.	I can **create** my own rough sketch and annotate it.	I can create my own **detailed** sketch and annotate it.

KDO Year 7 (Spring Half Term 2) – Cultural capital project						
	Title	**Lesson Objective (WALT)**	**Assessment Opportunities**			
			Bronze (1-2)	**Silver (3-4)**	**Gold (5-6)**	**Platinum (7+)**
1	Thinking like an innovator	Design sheet activity (EC1)	I can **describe** how a textile designer works.	I can **identify** key elements of a textile design brief.	I can create a **basic** design specification.	I can **create** a **detailed** design specification.
2	Finishes	Understand how to finishe polymers (MB2, 3 & 4)	I can **explain** what key terms mean.	I can **explain** how to dye fabric.	I can **explain** how to print on fabric.	I can **communicate** effectively within a group and explain how colour, stitch and textures are added to fabrics.
3	Finishes	Finishing products (MA7, 8, MB7,8, 9 & 11)	I need **help** threading a needle.	I can **independently** thread a needle.	I can **independently** thread a needle and complete basic stitches.	I can **independently** thread a needle and complete a range of stitches.
3	New & smart materials	Identify new and smart materials (DA2, 8, 10 & 11)	I find it **difficult** to identify different fibres.	I can **identify** different fibres and textiles.	I can **describe** the origins and properties of some textiles.	I can **describe** the origins and properties of a range of fibres and textiles.
5	Evaluation	Communicate learning	I need **help** to evaluate my design against the original specification	I **can** evaluate my design agains the original specification.	I **can** evaluate my design against the original specification and identify ways of improving it.	I can **evaluate** my work and share creative ideas and encouragement with other student's.

KDO Year 7 (Summer half term 1) - Cultural capital project						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Welcome /baseline textiles	Identify international design problems and user wants, needs and values. Fast fasshion	I need **help** to identify user wants, needs and values.	I can **identify** some user wants, needs and values	I can **identify** a range of user wants, needs and values.	I can **explain** in detail how user wants, needs and values impact on design approaches.
2	Technology push/market pull	Being an innovator. Recap 6Rs repurposing textiles	I **struggle** to identify design opportunities.	I can identify **basic** design opportunities	I can identify a **range** of design opportunities	I can generate **multiple** solutions to multiple design opportunities.
3	Applying colour and finishes	Dye sublimation (DA2, 7, 9 & 11)	I need **help** to identify different types of energy generation.	I can **identify** different forms of energy.	I can **describe** the impact of energy poverty	I can **describe** the impact of energy poverty and identify some design opportunities.
4	Analysis of products	Analysis of products (MB2, MB3, MB4)	I need **help** using the ACCESSFM analysis technique	I **can** analyse a product using ACCESSFM	I can provide a **detailed** product analysis using ACCESSFM.	I can help others analyse a product using ACCESSFM.
5	CAD		I can **identify** resistors and capacitors	I can **test** resistors and make a note of the results.	I can comment and **communicate** effectively whilst working in a group. I will usually lead my group.	I can **describe** and give examples of how nature influences various designs/products.

KDO Year 7 (Summer Half Term 2) – Cultural capital project						
	Title	**Lesson Objective (WALT)**	**Assessment Opportunities**			
			Bronze (1-2)	**Silver (3-4)**	**Gold (5-6)**	**Platinum (7+)**
1	Textile	Creating a textile product (EC1, DB11)	I can **identify** key elements of a basic circuit diagram	I can **create** a basic circuit diagram.	I can **create** a compact circuit diagram.	I can **create** a tight PCB design.
2	Anthropometrics and ergonomics	Understand ergonomics and anthropometric data (DA9, 10, DB9)	I can **explain** what key terms mean.	I can **explain** how anthropometric data influences design.	I can **analyse** anthropometric and ergonomic data.	I can **incorporate** anthropometric data and ergonomic factors in my design
3	Iterative design process	Testing, evaluating and modifying the original design (EA1, EA2, EA5)	I find it **difficult** to modify my original idea.	I can **modify** some elements of my original idea.	I can **demonstrate** my understanding of the iterative design process.	I can demonstrate my understanding of the iterative design process and **help others** to modify their designs.
3	Modelling	Creating a textile product (TK3, TK4, TK20)	I need **help** to create a basic PCB	I can **create** a basic PCB.	I can design a more **complex** PCB	I can design a complex PCB and **help others** with their models.
5	Evaluating	Evaluating own ideas (EA1 & 2)	I need **help** to evaluate my design against the original specification	I **can** evaluate my design agains the original specification.	I **can** evaluate my design against the original specification and identify ways of improving it.	I can **evaluate** my work and share creative ideas and encouragement with other student's.

KDO Year 8	Autumn	Spring	Summer
Project focus	Textiles	electronics/timbers	Architecture/engineering
Learning objectives	Why study D&T Recalling health and safety in D&T. Learn how to analyse products. Learning to develop basic design communication skills including sketching, drawing, controlling lines, measuring and annotation. Work confidently within a range of relevant domestic, local and industrial contexts eg Placemaking and the built environment. Identify and solve their own design problems Use 2D and begin to use 3D CAD packages to model their ideas. Anthropometrics, ergonomics, designing for inclusivity.	Learning to generate and communicate design ideas. Use a variety of design approaches for example biomimicry and user-centred design, to generate creative ideas and avoid stereotypical responses. Understand the properties of materials. Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety. Produce models of their ideas using CAM to test out their ideas. Produce 3D models to develop and communicate ideas. Give oral and digital presentations and use computer-based tools.	Identifying and solving real and relevant design problems. Communicating design ideas, anthropometrics, ergonomics (SEC). Analysing products. Products through disassembly. Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety. How to select and modify patterns and use in textile construction. Understand the properties of materials, including smart materials and how they can be used to advantage.
Key learning	Communication of design ideas Development of design ideas Use of basic graphical skills Develop basic sketching and annotation skills Importance of Placemaking and the Built Environment Importance of maintaining traditional skills as part of a culture/country's heritage How this can be combined with current technology to improve the quality of life for people To take creative risks when designing	Know what a design brief means and what a context is in relation to the brief. Apply design strategies in order to generate innovative design ideas that meet the brief. Creation of a design specification using a design context and brief. To take creative risks when designing.	Communication of design ideas and the use of annotation for evaluation. Learn how to analyse products How existing products can be a rich source of information Apply design strategies in order to generate innovative design ideas that meet the brief. To take creative risks when designing.
Cross-Curricular	Literacy: group discussion/active listening Science: forces, stress and load Maths: data collection Geography: weathering of materials	Science: properties of materials Maths: data analysis/costing Geography: import/export History: Caesar/campaign furniture	Geography: sustainability/landfill/waste Maths: measuring/data Literacy: reading/research
Assessment	•Safe practice using equipment and processes •Designing within a context for a chosen user group and identifying their needs • Sketching rough ideas • Developing 2D ideas into 3D models	• Sketching ideas • Design approaches eg biomimicry • Develop and communicate design ideas • Modelling	• Developing design ideas • Learning how to sketch in 3D • Use of drawing and rendering skills •Modelling
Assessment	Formative: Questioning WWW/EBI Summative: Baseline Test (Testing theoretical knowledge)	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative:Differentiated Starter Activities. Plenary - GCSE Exam Style Question.

KDO Year.7 – Intent, Implementation, Impact		
Autumn	Spring	Summer
Intent: Core - Health & safety - User-centred design - Anthropometrics/ergonomics - Graphical skills Designing - DA1 - DA2 - DA3 - DA4 - DA7 - DA8 - DA9 - DA10 - DA11 - DB5 - DB6 - DB7 - DB9 Making - MA1 - MA7 - MB8 Evaluation - EA1 - EA5 - EB2 Technical TK1 - TK2 - TK7 - TK17 - TK18 - TK19 **Implementation:** - Follow procedures for safety and understand the process of risk assessment - Explore user-centred design - Key words and vocab - Design approaches - Practically demonstrating Key Words. - Baseline Assessment gain a better idea of student's prior knowledge. **Impact:** - Group Discussions to check understanding and address misconceptions. - Knowledge Drill; Verbal Feedback / Whiteboards. - Presentation of design ideas. - Baseline Assessment on students Prior Learning.	**Intent:** Core - Sustainability, waste & Environmental issues - Properties of materials Designing - DA1 - DA2 - DA3 - DA7 - DA8 - DA9 - DA11 - DB1 - DB6 - DB7 - DB9 - DB12 Making - MA1 - MA2 - MA5 - MA7 - MB2 - MB7 - MB8 - MB9 - MB11 Evaluation - EA1 - EA2 - EA5 - EB2 - EB7 - EC1 Technical - TK1 - TK2 - TK4 - TK5 - TK6 **Implementation:** - Develop and communicate design ideas - Work as part of a team - Present design ideas - Explore a wider, more complex range of materials. - Knowledge Drill (Written Quiz on Key Words) **Impact:** - Designing within a context - Good communication skills during group discussions. - Responding to feedback that then improves upon their original product.	**Intent:** Core - Analysis by disassembly - Understanding textile construction Designing - DA1 - DA2 - DA4 - DA7 - DA8 - DA9 - DA10 - DB5 - DB7 - DB9 - DB10 - DB11 - DB12 Making - MA1 - MA2 - MA3 - MA5 - MA6 - MA7 - MB7 - MB10 Evaluation - EA1 - EA2 - EA5 - EB1 - EB2 - EC1 Technical - TK1 - TK3 - TK4 - TK5 - TK6 - TK16 **Implementation:** - To learn about electronic components. - Learning through Quizzes, Knowledge Drills, Whiteboards, Kahoot, Questioning/Blooms. - Communicate design ideas - Knowledge Drill (Written Quiz on Key Words) **Impact**: - How to read, design and build a simple circuit - Graphics: developing ideas - Students can correctly identify key materials and equipment.

KDO Year 8 – Technical textiles							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	6.9.21	Sensory analysis	ADHD/Dementia/Children's learning and play. Analysis of fabrics/Claire House/Sensory rooms				
2	13.9.21	UN Sustainability Goal 12	Textile origins and properties how can textiles be upcycled				
3	20.9.21	Sashiko	Basic stitches				
4	27.9.21	Research	Client needs, wants and values/understanding ADHD/Autism				
5	4.10.21	Sashiko	Development				
6	11.10.21	Shibori/sashiko	Historical research				
7	18.10.21	Shibori	Pleats, buttons and tassels				

KDO Year 8 – technical textiles							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
8	1.11.21	Product	development				
9	8.11.21	Refine	Refine prototypes				
10	15.11.21	Assessments	Presentation – explain your product/design sheet				
11	22.11.21	Refine	Modify prototypes				
12	29.11.21	refine	modify				
13	6.12.11	refine	modify				
14	13.12.11	Finalise product	Final evaluation				

KDO Year 8 – Innovate Renew Tin Can lights							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	4.1.22	Overview and investigation	Task analysis, rough sketches				
2	10.1.22	Ecological & social footprint	Six Rs – deforestation, tin production				
3	17.1.22	Selection of materials	Exploration of materials and their properties, tools and equipment, accurately marking out and reducing waste,modify sketches				
4	24.1.22	Work of others	Memphis/Arts & Crafts/Steampunk				
5	31.1.22	Selection of materials	Fixings, components and finishes, modify sketches				
6	7.2.22	Communicate design ideas	Graphic cover				

KDO Year 8 – tin can lights							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
7	14.2.22	Production	practical				
8	28.2.22	Means of production	Batch, one off, lean				
9	7.3.22	production	practical				
10	14.3.21	Assessment week	Evaluations/test. Produce costing sheets				
11	21.3.22	production	Practical and photographs				
12	28.3.22	Evaluation	How would the product be commercially manufactured				

KDO Year 8 – Architecture/engineering shipping container homes							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1		D&T	Health & Safety/expectations				
2		Contexts, briefs and specifications	Sketchbook expectations, Market pull, technology push/people, society & culture				
3		Communicating design ideas	Sketching/rendering/annotation				
4		Identifying problems	Project brief analysis, research and iterative design process				
5		Materials	Physical and working properties,				
6		Design specification	Design specification				

KDO Year 8 – Architecture/engineering: shipping containers							
		Title	Lesson Objective (WALT)	Assessment Opportunities			
				Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
7		Tools and equipment	Scalpels, materials, expectations				
8		Communicating design ideas	Design sheet activity				
9		Modelling	Practical				
10		Testing	Reflection and research				
11		Modification	Practical				
12		Testing	Peer review, feedback and research				
13		Finalise model	Practical				
14		Evaluation	Improvements to design				

KDO Year 9	Autumn	Spring	Summer
	Rotation 1	Rotation 2	Rotation 3
Project focus	Core Skills	Wearable tech	On the move
Learning objectives	Why study D&T Recalling health and safety in D&T. Learn to identify a design problem. Develop basic design communication skills including sketching, drawing, controlling lines, measuring and annotation. Work confidently within a range of relevant domestic, local and industrial contexts eg Placemaking and the built environment. Identify and solve their own design problems Use 2D and begin to use 3D CAD packages to model their ideas. Anthropometrics, ergonomics, designing for inclusivity and sustainability.	Learning to generate and communicate design ideas. Use a variety of design approaches for example biomimicry and user-centred design, to generate creative ideas and avoid stereotypical responses. Understand the properties of materials. Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety. Produce models of their ideas using CAM to test out their ideas. Produce 3D models to develop and communicate ideas. Give oral and digital presentations and use computer-based tools. How to select and modify patterns and use in textile construction.	Identifying and solving real and relevant design problems eg energy generation and storage. Communicating design ideas. Analysing products. Develop design specifications that include a wider range of requirements such as environmental, aesthetic, cost, maintenance, quality and safety. Understand the properties of materials, including smart materials and how they can be used to advantage.
Key learning	Communication of design ideas Development of design ideas Use of basic graphical skills Develop basic sketching and annotation skills Importance of Placemaking and the Built Environment Importance of maintaining traditional skills as part of a culture/country's heritage How this can be combined with current technology to improve the quality of life for people To take creative risks when designing	Know what a design brief means and what a context is in relation to the brief. Apply design strategies in order to generate innovative design ideas that meet the brief. Creation of a design specification using a design context and brief. To take creative risks when designing.	Communication of design ideas and the use of annotation for evaluation. Learn how to analyse products How existing products can be a rich source of information Apply design strategies in order to generate innovative design ideas that meet the brief. To take creative risks when designing.
Cross-Curricular	Literacy: group discussion/active listening Science: forces, stress and load Maths: data collection Geography: weathering of materials Culture: Serpentine gallery	Science: properties of materials Maths: data analysis/costing Geography: import/export History: Textiles industry	Geography: sustainability/energy/renewables Maths: measuring/data Literacy: reading/research
Assessment	• Safe practice using equipment and processes • Designing within a context for a chosen user group and identifying their needs • Sketching rough ideas • Developing 2D ideas into 3D models	• Sketching ideas • Design approaches eg biomimicry • Develop and communicate textile design ideas • Modelling	• Developing design ideas • Learning how to sketch in 3D • Use of drawing and rendering skills • Modelling
Assessment	Formative: Questioning WWW/EBI Summative: Baseline Test (Testing theoretical knowledge)	Formative: Questioning WWW/EBI Summative: Differentiated starter/plenary activities	Formative: Questioning WWW/EBI Summative:Differentiated Starter Activities. Plenary - GCSE Exam Style Question.

KDO Year.9 – Intent, Implementation, Impact		
Autumn	Spring	Summer
Rotation 1	Rotation 2	Rotation 3
Core Skills	Wearable tech	On the move
Intent: Core - Health & safety - User-centred design - Anthropometrics/ergonomics - Graphical skills Designing - DA1 - DA2 - DA3 - DA4 - DA5 - DA6 - DA7 - DA8 - DA9 - DA10 - DA11 - DB5 - DB6 - DB7 - DB9 Making - MA1 - MA7 - MB8 Evaluation - EA1 - EA5 - EB2 Technical - TK1 - TK2 - TK7 - TK17 - TK18 - TK19 **Implementation:** - Follow procedures for safety and understand the process of risk assessment - Explore user-centred design - Key words and vocab - Design approaches - Practically demonstrating Key Words. - Baseline Assessment gain a better idea of student's prior knowledge. **Impact:** - Group Discussions to check understanding and address misconceptions. - Knowledge Drill; Verbal Feedback / Whiteboards. - Presentation of design ideas. - Baseline Assessment on students Prior Learning.	**Intent:** Core - Sustainability, waste & Environmental issues - Properties of materials Designing - DA1 - DA2 - DA3 - DA4 - DA5 - DA7 - DA8 - DA9 - DA11 - DB1 - DB6 - DB7 - DB9 - DB12 Making - MA1 - MA2 - MA5 - MA7 - MB2 - MB7 - MB8 - MB9 - MB11 Evaluation - EA1 - EA2 - EA5 - EB2 - EB7 - EC1 Technical - TK1 - TK2 - TK4 - TK5 - TK6 - TK10 **Implementation:** - Develop and communicate design ideas - Work as part of a team - Present design ideas - Explore a wider, more complex range of materials. - Knowledge Drill (Written Quiz on Key Words) **Impact:** - Designing within a context - Good communication skills during group discussions. - Responding to feedback that then improves upon their original product.	**Intent:** Core - Analysis by disassembly - Understanding textile construction Designing - DA1 - DA2 - DA4 - DA7 - DA8 - DA9 - DA10 - DB5 - DB7 - DB9 - DB10 - DB11 - DB12 Making - MA1 - MA2 - MA3 - MA5 - MA6 - MA7 - MB7 - MB10 Evaluation - EA1 - EA2 - EA5 - EB1 - EB2 - EC1 Technical - TK1 - TK3 - TK4 - TK5 - TK6 - TK7 - TK16 **Implementation:** - To learn about electronic components. - Learning through Quizzes, Knowledge Drills, Whiteboards, Kahoot, Questioning/Blooms. - Communicate design ideas - Knowledge Drill (Written Quiz on Key Words) **Impact**: - How to read, design and build a simple circuit - Graphics: developing ideas - Students can correctly identify key materials and equipment.

KDO Year 9 (Autumn Term rotation 1) – Journey to school LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Welcome and overview	Why study D&T/career options/project overview				
2	Contexts, briefs and specifications	Expectations, Market pull, technology push/people, society & culture				
3	Analysing products	ACCESSFM and work of others				
4	Ergonomics/anthropometrics	Primary and secondary research/data				
5	Can't draw/won't draw	Sketching, rendering annotation				
6	Crating	2D & 3D techniques				

KDO Year 9 (Autumn term rotation 1) – Journey to school LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
7	Iterative design process	Design strategies				
8	New and emerging technologies	Automation, batch and one off				
9	New and emerging technologies	Sustainability and design for maintenance				
10	Materials	Finishes/material modification				
11	Design	Develop design ideas				
12	Evaluation	Improvements to design/how it could be commercially manufactured				

KDO Year 9 (Spring Term rotation 2) – Wearable tech LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Dual purpose textiles	How technology can be included into textiles to give added value				
2	Values	Learning how to balance aesthetic qualities with performance requirements and the cost of the textile industry				
3	Technical textiles	Using smart, modern and composite textiles				
4	Challenge	Paratriathlete design challenge				
5	Challenge	Paratriathlete design challenge				
6	Challenge	Paratriathlete design challenge				

KDO Year 9 (Spring term rotation 2) – Wearable tech LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
7	Product analysis	Learning how to analyse existing wearable technology products				
8	Circuits	Understanding electronics and creating paper circuits				
9	Blinkybot	Creating an electronic bug with motion sensors and LED eyes				
10	Blinkybot	Creating an electronic bug with motion sensors and LED eyes				
11	Design approach	Incorporating light/temperature/motion sensors in garments				
12	Evaluation	Reflecting on the design process and technical textiles				

KDO Year 9 (Summer Term rotation 3) – On the move LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Wind power	Understanding wind power and Sustainable Development Goals (SDG)				
2	Energy	Understanding the National Grid				
3	AWT	Understanding Airborne Wind Technology				
4	Technology in society	Exploring alternative energy production				
5	Modelling	Advanced modelling using CAD software to model design ideas				
6	Modelling	Advanced modelling using CAD software to model design ideas				

KDO Year 9 (Summer term rotation 3) – On the move LESSONS						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
7	Wind power	Making a model wind turbine				
8	Wind power	Making a model wind turbine				
9	Design for a better world	Sustainable cities				
10	Design for a better world	Sustainable cities				
11	Design for a better world	Sustainable cities				
12	Evaluation	Reflecting on designing and making				

KDO Year 10 BTEC Construction Autumn Term (5 lessons per fortnight - 10 weeks so 25 lessons) First exam 21.5.21

	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7
1	Unit introduction	Understand Learning Aim A and skills builder activity				
2	Topic A. 1 Performance Requirements	Understand performance requirements of a building, sub-structure and superstructure				
3	Strength & stability	Understand live, dead and dynamic loads, cavity walls and ties.				
4	Fire resistance	Understand the importance of fire resistance				
5	Thermal insulation	Understand the importance of thermal insulation				
6	Sound insulation	Understand the principles of sound insulation				
7	Weather resistance	Understand what is meant by weather resistance.				
8	Sustainability	Understand the principles of sustainability in buildings				
9	Topic A.2 Common Structural forms for low rise construction	Understand traditional construction techniques and materials				
10	Revision	Revision of Learning Aim A				

KDO Year 10 BTEC Construction Autumn Term (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7
11	Topic B.1 Preconstruction work	Understand Learning Aim B and the legal requirements of preconstruction				
12	Planning	Understand what is meant by a 'programme of work'				
13	Topic B.2 Sub-structure groundworks	Understand the hazards associated with groundworks				
14	Foundations	Understand the different types of foundation				
15	Ground floors	Understand how ground floors are constructed				
16	Topic C.1 Superstructures - walls	Understand the functions of a wall				
17	Wall finishes	Understand types of wall finishes				
18	Wall construction	Understand the materials used in the construction of walls				
19	Wall openings	Understand the function of wall openings				
20	Topic c.2: Superstructures - floors	Understand the detailing of floors.				

KDO Year 10 BTEC Construction Autumn Term (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Floor construction	Understand superstructure terminology				
22	Floor construction cont	Understand eco-joints, engineered and precast joints				
23	Floor finishes	Understand different types of floor finishes				
24	Floor components	Understand floor components				
25	Topic C.3 Superstructures - roofs	Understand different kinds of roofs				
	Christmas break					
26	Roof construction	Understand construction of roofs				
27	Roof finishes	Understand different types of roof finish				
28	Roof components	Understand roof components				
29	Revision of Learning Aims B& C	Revise Learning aims B&C and complete any outstanding work				
30	Revision of entire unit	Revision				

KDO Year 10 BTEC Construction Unit 3 summer term and beyond 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Unit 2: Scientific and mathematical applications for construction	Understand the nature of the learning aims and assignments				
2	Topic A.1 Effect of forces	Understand nature of forces and relationship between mass, force and weight				
3	Forces	Understand the effect of forces				
4	Stress	Understand stresses in materials				
5	Strain	Understand how to calculate modulus of elasticity				
6	Hooke's law	Understand Hooke's Law				
7	Topic A.2 Temperature	Understand how materials react to temperature				
8	Heat storage	Understand changes of state				
9	Heat storage	Understand and calculate heat storage				
10	Heat capacity	Understand and calculate specific heat capacity				

KDO Year 10 BTEC Construction Unit 3 summer term and beyond 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
11	Thermal conductivity	Understand and calculate thermal resistance				
12	Linear expansion	Understand and calculate coefficient of linear expansion				
13	Loading	Understand effective loading on materials				
14	Load	Understand changes in loading				
15	Assignment 1	Assignment 1				
16	Topic B.1 Algebraic and graphical methods	Understand formulae				
17	Rearranging formulae	Understand complex formulae				
18	Substituting values	Evaluating formulae				
19	Equations	Solving linear equations				
20	Cartesian Coordinates	Understand Cartesian coordinates				

KDO Year 10 BTEC Construction Unit 3 summer term and beyond 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Gradient	Understand gradient and intercept				
22	Topic B.2 Mensuration	Understand and calculate area				
23	Cross-sectional area	Understand and calculate area				
24	Land area	Calculate land area				
25	Volume	Calculate volumes				
26	Volume	Calculate volumes				
27	Topic B.3 Trigonometry	Understand trigonometric functions				
28	Staircase design	Undersand staircase design				
29	Alignment	Apply trigonometric functions				
30	Assignment 2	Assignment 2				

KDO Year 10 BTEC Construction Spring Term (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7
1	Unit 3: Construction & Design	Understand the nature of the Learning Aims and Assignments				
2	Topic A.1 The Construction Industry and the Built Environment	Understand the reasons for designing buildings				
3	Infrastructure	Understand local infrastructure				
4	Community inclusion	Undestand placemaking				
5	Construction employment	Understand how construction creates employment opportunities				
6	Benefits of construction sector	Understand global benefits of the built environment				
7	Topic A.2: Construction Industry	Understand construction activities				
8	Remit	Understand the range of work the construction industry undertakes				
9	Assessment workshop	Assignment No1				
10	Topic B.1 Client's needs	Understand the needs of a client				

KDO Year 10 BTEC Construction Autumn Term (5 lessons per fortnight - 10 weeks so 25 lessons)

	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7
11	Clients needs	Understand the needs of the client cont				
12	Clients needs	Understand the needs of the client cont				
13	Clients needs	Understand the needs of the client cont				
14	Topic B.2 Design constraints	Understand design constraints				
15	Local plan	Understand planning permission and local plan				
16	Building control	Understand building control				
17	Topic B.3. Client brief	Understand and develop a client brief				
18	Client brief	Produce a mood board				
19	Assessment workshop	Assignment No 2.				
20	Topic C.1 Initial sketches	Understand what a concept sketch is				

KDO Year 10 BTEC Construction Autumn Term (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Initial sketches	Produce an initial concept sketch				
22	Initial sketch	Practice perspective sketching				
23	Initial sketch	Develop design sketches				
24	Client approval	Review of concept ideas				
25	Assessment workshop	Assignment No 3 (Portfolio parameters and content)				
26	Assessment workshop	Production of portfolio - initial sketches				
27	Assessment workshop	Production of portfolio - initial sketches				
28	Assessment workshop	Production of portfolio -review concept ideas				
29	Assessment workshop	Production of portfolio - refine concept idea				
30	Assessment workshop	Wipe up session and grade confirmation				

KDO Year 10 GCSE D&T Autumn term 30 GLH						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Welcome back	Why they chose D&T/opportunities/boost	New & emerging technologies	Understanding robotics eg BMW/Jaguar		
2		NEA	New & emerging technologies	Understanding automation		
3		NEA	New & emerging technologies	Understanding enterprise and market pull v technology push		
4		NEA	New & emerging technologies	Understanding sustainability, ethics and needs		
5		NEA	New & emerging technologies	Analysing products		
6	3.2.1 selection of materials		New & emerging technologies	Sketching and annotating designs		
7		NEA	New & emerging technologies	Analysis of environmental impact and life cycle assessment		
8		NEA	New & emerging technologies	Evaluating ethical considerations		
9		NEA	Energy generation	Understanding key terminology		
10		NEA				

KDO Year 10 GCSE D&T Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
11	Energy	Mind map arguments for and against nuclear power				
12	Systems	Understanding a systems approach to designing				
13	Mechanical devices	Understand types of motion, movement and mechanisms				
14	Mechanical devices	Identify levers, linkages and rotary systems				
15	Modern materials	Introduction to modern, smart, composite and technical textiles.				
16	New materials	Developing knowledge of composite materials and technical textiles				
17	Materials and their working properties	Wood				
18	Materials and their working properties	Metals				
19	Materials and their working properties	Polymers				
20	Mini NEA	Understand iterative thinking and deliver a mini NEA in one of the materials eg docking station.				

KDO Year 10 GCSE D&T Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Materials	Primary investigation - product analysis				
22	Selection of materials	Project development				
23	Selection of materials	Exploring materials				
24	Communication of ideas	Designing, sketching, modelling				
25	Communication of ideas	Developing ideas				
26	Footprint	Six R's - modify design				
27	Communication of ideas	Alternative drawing skills explore				
28	Properties of materials	Product analysis of existing docking station				
29	Analysis	Product analysis				
30	Modifying properties	Sampling, testing and modifying materials				

KDO Year 10 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
31	Stock materials	Calculating area, volume, nesting and minimising waste				
32	Communicating ideas	Scales of production, modifying design.				
33	Data	Primary and secondary data				
34	Communicating ideas	Working drawings				
35	Assessment	Data drop				
36	Specialist techniques	Making a prototype				
37	Specialist techniques	Prototype				
38	Specialist techniques	Introduce tolerances				
39	Specialist techniques	Prototype				
40	Specialist techniques	Recap tolerance and prototype				

KDO Year 10 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
41	Specialist technique	Quality control				
42	Specialist technique	Recording evidence				
43	Surface treatments	Demonstrate a range of techniques				
44	Surface treatments	Prototype finishes				
45	Surface treatments	Reflect on design - improve				
46	Surface treatments	Evaluation and assess how the product could be commercially manufactured				
47	Forces and stress	Look at reinforcing materials				
48	Forces and stress	Testing materials for force and stress				
49	NEA Project 2	Introducing 3.3 Section C Lighting. Design and making diary				
50	The work of others	Understanding chosen designer/company				

KDO Year 10 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
51	Work of others	Presentation of research into lighting				
52	Work of others	Product analysis of lighting				
53	Design strategies	User needs & client brief of lighting				
54	Communicating design ideas	Sketching				
55	Communicating design ideas	Developing ideas - 2D & 3D and annotation				
56	Data	Market research, anthropometrics and ergonomics				
57	Design constraints	Ethics, environmental, social and economic challenge				
58	Design brief	How to write a design brief				
59	Design strategies	Generating imaginative designs - sketching, 2D and 3D.				
60	Design strategies	Developing ideas - interview client				

KDO Year 10 GCSE D&T Summer term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
61	Communicating design ideas	Developing designs				
62	Design specification	Analysis of investigation work				
63	Iterative design process	Modify design				
64	Communicating design ideas	Isometric drawing				
65	Communicating design ideas	Perspective				
66	Communicating design ideas	Computer based tools				
67	Communicating design ideas	Modelling				
68	Communicating design ideas	Prototype				
69	Aesthetics	Selecting materials and finishes				
70	Selection of materials	Recap prior learning				

KDO Year 10 GCSE D&T Summer term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
71	Tolerances	Revisit tolerances, nesting and quality control				
72	Selection of materials	Peer assessment of marking out practical and limitation of waste				
73	Specialist tools and equipment	Safe use of tools				
74	Specialist tools and equipment	Final prototype				
75	Specialist tools and equipment	Applying a surface finish				
76	Specialist tools and equipment	Prototype				
77	Specialist tools and equipment	Final prototype and evaluation				
78	Assessment 2	Data drop				
79	Materials	Product analysis re materials				
80	Materials	Modification of materials				

KDO Year 10 GCSE D&T Summer term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
81	Commercial processes	Scales of production				
82	Commercial processes	Batch production				
83	Identifying design opportunities	Client needs, wants and values				
84	Presentation	Portfolio presentation and learning objectives				
85	Writing a brief	Design brief				
86	Iterative design process	Recap				
87	Selecting materials	Recap				
88	Assessment	Data drop				
89	NEA	Unpacking design challenge				
90	NEA	Identifying design opportunities				

KDO Year 11 GCSE D&T Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Welcome back	Why they chose D&T/opportunities/boost	Welcome	Expectations/Unpacking design brief		
2		NEA	NEA	Iterative design process/Identifying design opportunities		
3		NEA	NEA	Research/data		
4		NEA	NEA	Sketching and annotation		
5		NEA	NEA	Sustainability		
6	3.2.1 selection of materials		NEA	Product analysis		
7		NEA	NEA	Iterative design process		
8		NEA	NEA	Properties of materials		
9		NEA	NEA	Develop ideas		
10		NEA	NEA	Review with client		

KDO Year 11 GCSE D&T Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
11	3.2.2	Forces and stresses				
12		NEA				
13		NEA				
14		NEA				
15		NEA				
16	3.2.3	Ecological & social footprint				
17		NEA				
18		NEA				
19		NEA				
20		NEA				

KDO Year 11 GCSE D&T Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	3.2.4	Sources & origins				
22		NEA				
23		NEA				
24		NEA				
25		NEA				
26	3.2.5	Using and working with materials				
27		NEA				
28		NEA				
29		NEA				
30		NEA				

KDO Year 11 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
31	Mocks					
32	Mocks					
33	3.2.6	Stock forms, types and sizes	Revision	Iterative design process		
34		NEA	Revision	Communicating design ideas		
35		NEA	Revision	Product analysis		
36		NEA	Revision	User centred design		
37		NEA	Revision	Ergonomics/anthropometrics		
38	3.2.7	Scales of production	Revision	batch/automation		
39		NEA	Revision	Quality control		
40		NEA	Revision	Work of others		

KDO Year 11 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
41	NEA	NEA	Revision	Work of others		
42	NEA	NEA	Revision	Marking out		
43	3.2.8	Specialist techniques and processes	Revision	Smart, modern, composite and technical textiles		
44		NEA	Revision	tolerances/stress		
45		NEA	Revision	Wood		
46		NEA	Revision	Polymers		
47		NEA	Revision	Alloys		
48	3.2.9	Surface treatment and finishes	Revision	Product analysis		
49	3.3.1	Investigation, primary and secondary data	Revision	Six R's		
50	3.3.2	Environmental, social and economic change	Revision	Product lifecycle - cradle to grave/cradle to cradle		

KDO Year 11 GCSE D&T Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
51	3.3.3	The work of others	Revision	New & emerging technologies - robotics & automation		
52	3.3.4	Design strategies	Revision	CAD/CAM		
53	3.3.5	Communication of design ideas	Revision	Market pull/technology push/people, society and culture		
54	3.3.6	Prototype development	Revision	Sustainability/ethics		
55	3.3.7	Selection of materials and components	Revision	Energy generation and storage		
56	3.3.8	Tolerances	Revision	Nuclear		
57	3.3.9	Material management	Revision	Systems approach		
58	3.3.10	Specialist tools and equipment	Revision	Mechanisms		
59	3.3.11	Specialist techniques and processes	Revision	Recap		
60	3.1.1	New & emerging technologies	Revision	Recap		

KDO Year 11 BTEC Construction Unit 11 Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Unit introduction	Understand Learning Aim A and skills builder activity				
2	Topic A. 1 Performance Requirements	Understand performance requirements of a building, sub-structure and superstructure				
3	Strength & stability	Understand live, dead and dynamic loads, cavity walls and ties.				
4	Fire resistance	Understand the importance of fire resistance				
5	Thermal insulation	Understand the importance of thermal insulation				
6	Sound insulation	Understand the principles of sound insulation				
7	Weather resistance	Understand what is meant by weather resistance.				
8	Sustainability	Understand the principles of sustainability in buildings				
9	Topic A.2 Common Structural forms for low rise construction	Understand traditional construction techniques and materials				
10	Revision	Revision of Learning Aim A				

KDO Year 11 BTEC Construction Unit 11 Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
11	Topic B.1 Preconstruction work	Understand Learning Aim B and the legal requirements of preconstruction				
12	Planning	Understand what is meant by a 'programme of work'				
13	Topic B.2 Sub-structure groundworks	Understand the hazards associated with groundworks				
14	Foundations	Understand the different types of foundation				
15	Ground floors	Understand how ground floors are constructed				
16	Topic C.1 Superstructures - walls	Understand the functions of a wall				
17	Wall finishes	Understand types of wall finishes				
18	Wall construction	Understand the materials used in the construction of walls				
19	Wall openings	Understand the function of wall openings				
20	Topic c.2: Superstructures - floors	Understand the detailing of floors.				

KDO Year 11 BTEC Construction Unit 11 Autumn term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Floor construction	Understand superstructure terminology				
22	Floor construction cont	Understand eco-joints, engineered and precast joints				
23	Floor finishes	Understand different types of floor finishes				
24	Floor components	Understand floor components				
25	Topic C.3 Superstructures - roofs	Understand different kinds of roofs				
26	Christmas break					
27	Roof construction	Understand construction of roofs				
28	Roof finishes	Understand different types of roof finish				
29	Roof components	Understand roof components				
30	Revision of Learning Aims B& C	Revise Learning aims B&C and complete any outstanding work				

KDO Year 11 BTEC Construction Unit 4 Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
1	Unit 3: Construction & Design	Understand the nature of the Learning Aims and Assignments				
2	Topic A.1 The Construction Industry and the Built Environment	Understand the reasons for designing buildings				
3	Infrastructure	Understand local infrastructure				
4	Community inclusion	Undestand placemaking				
5	Construction employment	Understand how construction creates employment opportunities				
6	Benefits of construction sector	Understand global benefits of the built environment				
7	Topic A.2: Construction Industry	Understand construction activities				
8	Remit	Understand the range of work the construction industry undertakes				
9	Assessment workshop	Assignment No1				
10	Topic B.1 Client's needs	Understand the needs of a client				

KDO Year 11 BTEC Construction Unit 4 Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
11	Clients needs	Understand the needs of the client cont				
12	Clients needs	Understand the needs of the client cont				
13	Clients needs	Understand the needs of the client cont				
14	Topic B.2 Design constraints	Understand design constraints				
15	Local plan	Understand planning permission and local plan				
16	Building control	Understand building control				
17	Topic B.3. Client brief	Understand and develop a client brief				
18	Client brief	Produce a mood board				
19	Assessment workshop	Assignment No 2.				
20	Topic C.1 Initial sketches	Understand what a concept sketch is				

KDO Year 11 BTEC Construction Unit 4 Spring term 30 GLH (5 lessons per fortnight - 10 weeks so 25 lessons)						
	Title	Lesson Objective (WALT)	Assessment Opportunities			
			Bronze (1-2)	Silver (3-4)	Gold (5-6)	Platinum (7+)
21	Initial sketches	Produce an initial concept sketch				
22	Initial sketch	Practice perspective sketching				
23	Initial sketch	Develop design sketches				
24	Client approval	Review of concept ideas				
25	Assessment workshop	Assignment No 3 (Portfolio parameters and content)				
26	Assessment workshop	Production of portfolio - initial sketches				
27	Assessment workshop	Production of portfolio - initial sketches				
28	Assessment workshop	Production of portfolio -review concept ideas				
29	Assessment workshop	Production of portfolio - refine concept idea				
30	Assessment workshop	Wipe up session and grade confirmation				