DESIGN TECHNOLOGY

Why is the study of Design and Technology important?

Design and Technology is a practical and valuable subject. It enables students to actively contribute to the creativity, culture, wealth and well-being of themselves, their community and their nation. It teaches how to take risks and so become more resourceful, innovative, enterprising and capable. Students develop a critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for students to develop and apply value judgments of an aesthetic, economic, moral, social, and technical nature both in their own designing and when evaluating the work of others.

What students will know and understand from their study –

Across the four-year curriculum the aims of the Design and Technology curriculum is to include the development of capability within the subject, along with broad general skills. Below details the skills and knowledge that will be gained across the five years and this list whilst not exhaustive also includes skills and knowledge gained in Year 7 and 8.

What skills will the study of Design and Technology teach you?

Design and Technology use knowledge, skills and understanding from within the subject itself and also a wide range of other sources, especially but not exclusively science and mathematics. Design and Technology will teach you to:

- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.

- Be creative in developing solutions to real world problems.

- Use modelling and annotated sketches to develop and communicate ideas.

- How to act responsibly within a practical environment thinking of the safety of yourself and others..

- Identify how to competently use a range of practical techniques across a range of disciplines.

- Apply and use CAD/CAM equipment to design and manufacture a range of products and components considering scale of production and precision.

- Work independently and part of a team to solve complex problems.

- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way.

- Identify links between different materials and contextual references.

- Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.

- Understand and apply the principles of nutrition and health.

- Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet.

- Become competent in a range of cooking techniques (for example, selecting and preparing ingredients: using utensils and electrical equipment, applying heat in different ways: using awareness of taste, texture and smell to decide how to season dishes and combine ingredients, adapting and using their recipes).

- Understand the source, seasonality and characteristics of a broad range of ingredients.

What will you know and understand from your study of Design and Technology?

- How to classify materials including smart materials and discuss their physical properties.

- How to use simple electronic circuits incorporating inputs and outputs.

- How to manufacture products with reference to their materials physical properties.

- Students will learn to use and adjust equipment and machinery dependent on tasks.

- Use learning from science and mathematics to help design and manufacture components and products.

- Students will learn to consider the influence of a range of lifestyle factors and consumer choices when designing and analysing products.

- Students will know and understand additional factors to consider such as ergonomics, anthropometrics or dietary needs.

- How to use a variety of approaches, for example biomimicry and user-centred design to generate creative ideas and avoid stereotypical responses.

- Students will be able to evaluate their work against an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their product to their own designing and making.

- Students will be able to evaluate products through disassembly to determine how they are constructed and function and consider the life cycle analysis.

- How to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment.

Curriculum Planning

It is recognised schools are teaching a wide range of Key Stage 4 specifications, the themes and subject content have been identified from the following sources :

- The Design and Technology programmes of study for Key Stage 3
- GCSE subject content for Food Preparation and Nutrition
- GCSE subject content for Design and Technology
- WJEC Level 1/2 in Hospitality and Catering.
- BTEC Technical award Engineering
- GCSE Electronics
- VTCT Hair and Beauty
- IMI Certificate in Automotive Maintenance

Curriculum content only covers core knowledge common to all Key Stage 4 specifications. It is expected schools will include additional content from their chosen specification into their planning.
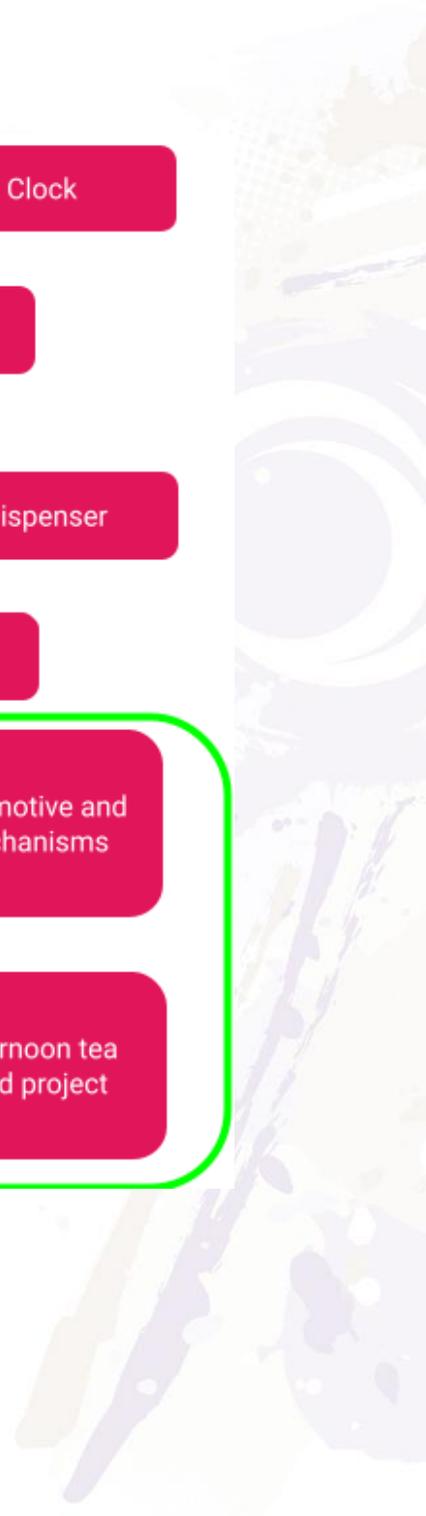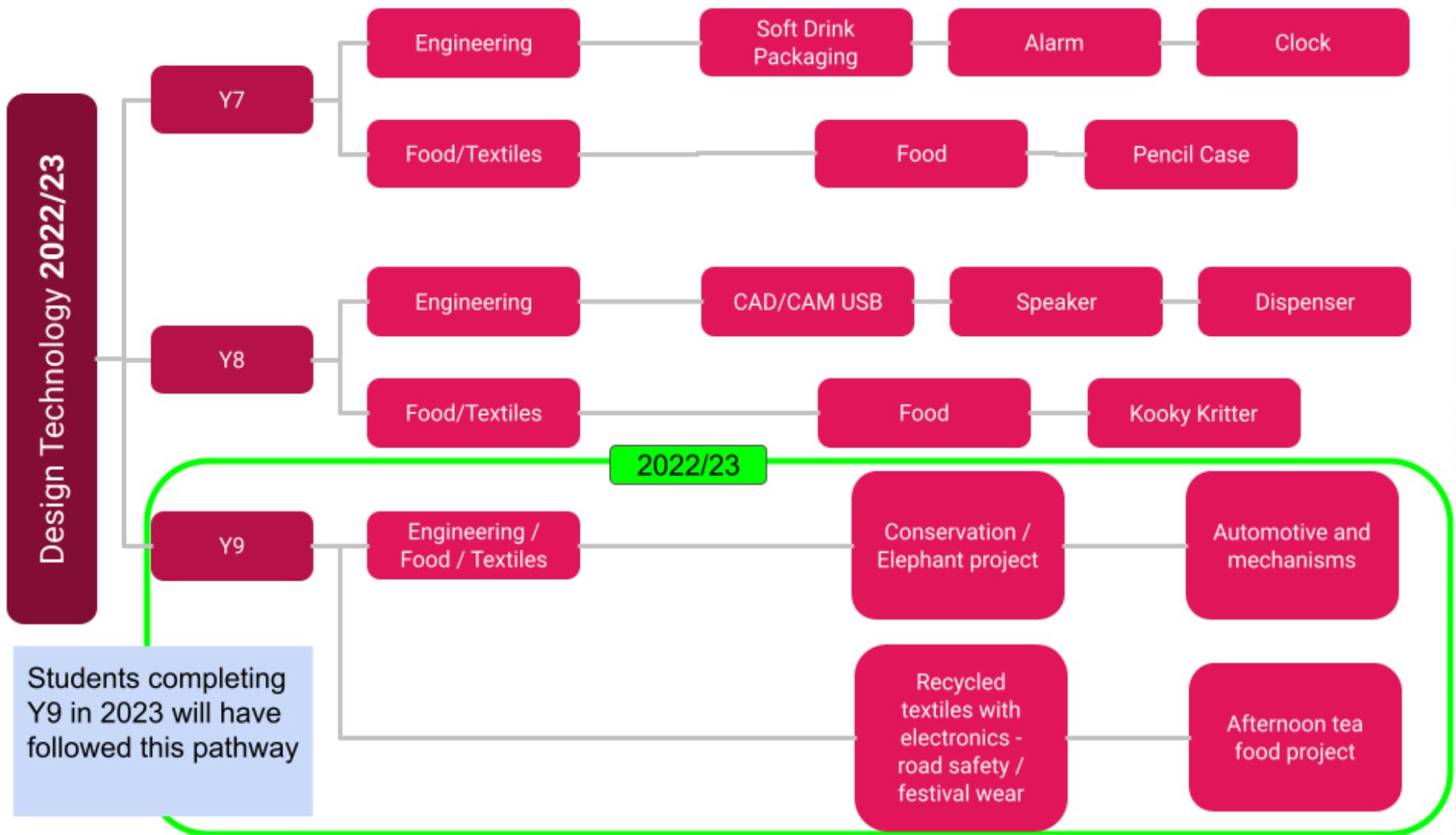
Context – Subject Curriculum Progression Overview

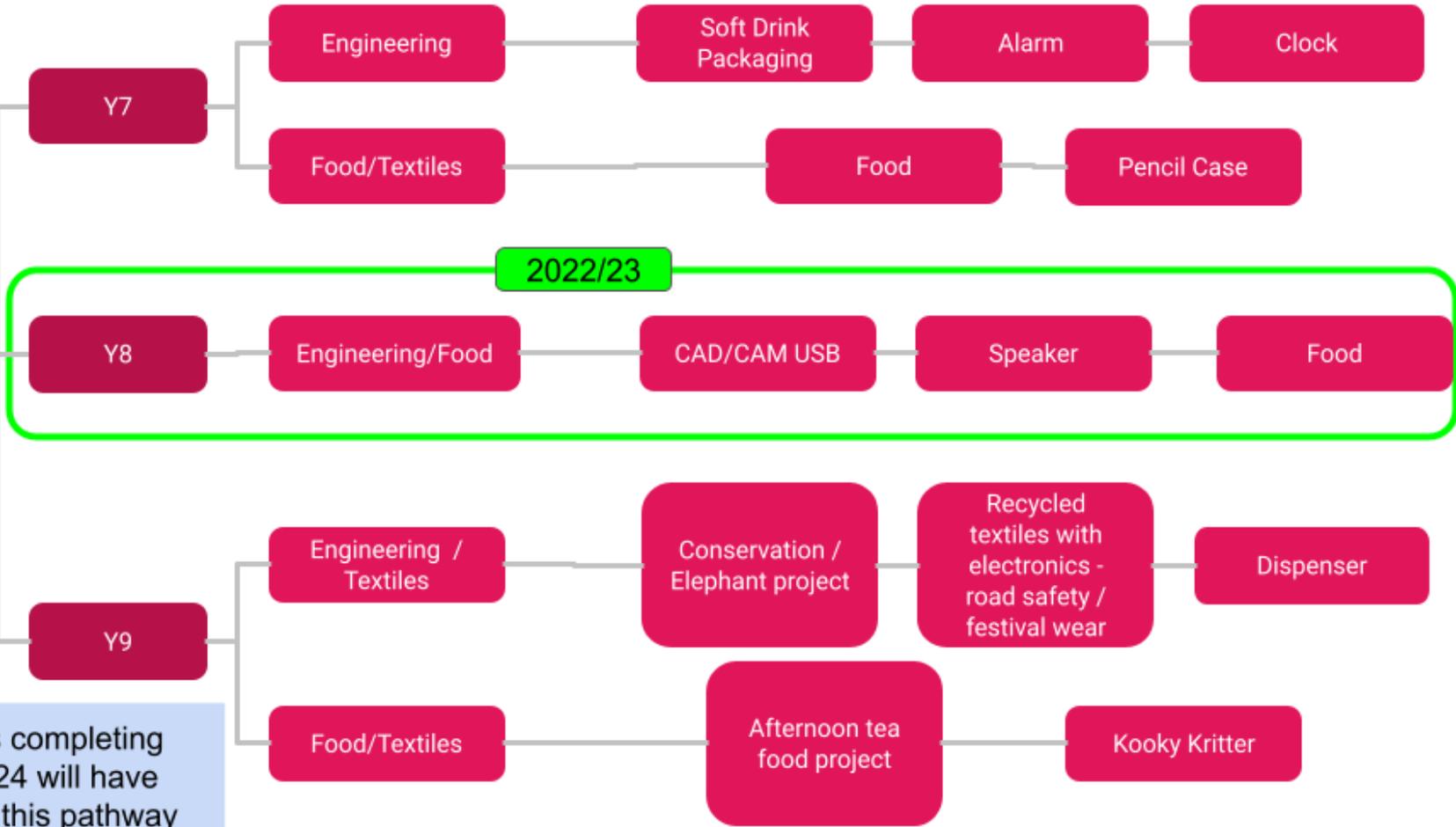|					
DESIGN AND TECHNOLOGY CURRICULUM PROGRESSION OVERVIEW OUTWOOD ACADEMY PORTLAND					
	Year 7 - FD	TX	Eng	EP	GP
Half term 1	Food- Fruit Salad, Pasta, Speedy Pizza) Pupils will: ● Recall and apply the principles of food safety and hygiene ● Identify appropriate ingredients and equipment to prepare and cook a range of dishes.	Pencil Case - Understand what textiles are. - Knowledge and understanding of natural and manmade fibres. - Product analysis of pencil cases - Research different design movements.	Clock Project Investigating designers and themes, modelling, materials.	Alarms - Investigating needs, learning about components including resistors, inputs and outputs, sensors, LDR as a smart material.	Soft drink - disassembly and analysis of existing containers and graphic designs. Analysis of graphic styles, planning a product.
Half term 2	Food - (Fruit Crumble, Chicken Nuggets, Meatballs in Ragu) Pupils will: ● Pupils will be able to apply their knowledge to make informed choices; ● Pupils will develop their knowledge of consumer food and drink choice	Pencil Case -Complete a specification for their new pencil case. -Produce creative design ideas. -Gain knowledge and understanding on CAD/CAM used in Textiles. -Use Sublimation printing and the heat press. - Use computerised machine embroidery.	Clock - Cutting and shaping plastics, heat processes, applying finishes.	Alarm - surface mount soldering skills, health and safety, testing and fault finding, functions of graphics and warning graphic styles.	Softdrink - Using CAD to create images and nets, applying graphics styles and techniques, manufacturing using modelling tools. Evaluating against a specification and collecting user opinion.

Half term 3	Food - (Coleslaw, shortbread, Chicken Wrap) Pupils will: ● Develop food preparation and cooking techniques; ● Develop their knowledge and understanding of ingredients and healthy eating.	Pencil Case -Use a wide range of technical, decorative, making and joining skills to produce a pencil case finished to a high standard. -Test and evaluate their pencil case against the specification.			
	Year 8 - FD	TX	Eng	EP	GP
Half term 1	Food - (Jam Tarts, Bolognese, Potato Wedges) Pupils will: ● Recall and apply the principles of food safety and hygiene; ● Pupils will deepen their knowledge of consumer food and drink choice; ● Deepen their knowledge and understanding of food and nutrition	Kooky Kritter -Research existing products. -Generate creative designs -Model their design and create a 2D/3D paper pattern. -Solve issues within the design -Consider anthropometrics for body measurements.	Gum Dispenser - Investigating a theme, developing a specification, investigating existing products and mechanisms, creating design ideas.	Speaker - Analysing needs, developing a specification, planning through technical drawings.	USB - analysing products, developing design ideas, modelling construction.
Half term 2	Food - (Parma Chicken, Bread plait, Pizza, Savoury pastries) Pupils will: ● Pupils will further develop food	Kooky Kritter -Plan making their Kritter using a making diary/log. -Use applique, hand and machine embroidery, surface embellishment to	Dispenser - measuring and marking out, cutting and shaping woods and timbers, testing mechanisms, types of finish and applying finishing techniques.	Speaker - Soldering a PCB, removing solder and correcting errors, securing components, surface finishes, testing, evaluating.	USB - CAD/CAM techniques, quality assurance and testing, packaging and graphic imagery.

	preparation and cooking techniques; ● Pupils will be able to apply their knowledge to make informed choices	produce high quality products			
Half term 3	Food - (Oat Cookies, Macaroni Cheese, Cheese scones) Pupils will: ● Pupils will build and apply a repertoire of knowledge, understanding and skills in order to design and make high quality products for a wide range of users; ● Pupils will develop the creative, technical and practical expertise needed to perform everyday tasks confidently.	Kooky Kritter -Reinforce CAD/CAM knowledge students choose to incorporate into their design if it is appropriate. -Test and evaluate Kooky kritter.			
	Year 9 - Afternoon Tea	Electro/Textiles	Eames Elephant	Automotive and mechanisms	
Half term 1	Health and Safety Apply styling techniques to sandwiches Make a whisked sponge Use the melting method	Investigate materials and new technologies. Client investigations Characteristics of parallel and series circuits Investigating designers and design styles	Investigation of user needs Materials and impact on society Modelling Prototypes	Principles of aerodynamics Investigation of streamlined shapes Design ideas Isometric skills Develop final design	

Half term 2	Source, seasonality and characteristics of ingredients Use the creaming method Use bread making techniques such as shaping and filling Shape, bake and fill puff pastry	Investigate upcycled clothing Create design ideas - evaluate and improve Pulse generators and electronic textiles components Paper models Cutting patterns	Shaping and finishing metals Quality and quality control Iterative design Manufacturing skills	Modelling using card Testing speed by applying scientific formula Types of motion Forces	
Half term 3	Nutrition and health. Food choices Use a blender effectively Make a savoury sauce	Sewing curves and curved hems with sewing machines Planning and creating lined textiles Testing and evaluating	Evaluating against a design specification Testing speed by applying scientific formula	Cams and mechanisms Selecting and manipulating mechanisms for a purpose Evaluating against a specification	

Design Technology 2022/23

Y7
- Engineering → Soft Drink Packaging → Alarm → Clock
- Food/Textiles → Food → Pencil Case

Y8
- Engineering → CAD/CAM USB → Speaker → Dispenser
- Food/Textiles → Food → Kooky Kritter

Y9 — 2022/23
- Engineering / Food / Textiles
  - Conservation / Elephant project → Automotive and mechanisms
  - Recycled textiles with electronics - road safety / festival wear → Afternoon tea food project

Students completing Y9 in 2023 will have followed this pathway

Design Technology 2023/24

Y7

Engineering — Soft Drink Packaging — Alarm — Clock

Food/Textiles — Food — Pencil Case

2022/23

Y8

Engineering/Food — CAD/CAM USB — Speaker — Food

Y9

Engineering / Textiles — Conservation / Elephant project — Recycled textiles with electronics - road safety / festival wear — Dispenser

Food/Textiles — Afternoon tea food project — Kooky Kritter

Students completing Y9 in 2024 will have followed this pathway

Year 7, Year 8 and Year 9 Assessment Criteria

TECHNICAL KNOWLEDGE

Level	Design Possibilities	User/Client	Analysis	Impact on society
Excelling	I can explain how and why manufacturing techniques are used in industry. [S][W][M]	An investigation of the user/client, with reference to the client's needs and wants. [S][W][M]	I understand the impact of new technologies from a user's, designer's and manufacturer's point of view. [S][W][M]	A good understanding of the impact on society including economic and social effects. [S][W][M]
Exceeding				
Achieving	I understand the properties of materials including electronic and mechanical systems. [S][W][M]	Investigation into the user/client, with limited reference to the client's needs and wants at basic level. [S][W][M]	Basic identification and description of the work of others to inform ideas. [S][W][M]	Basic understanding of the impact on society based on economic or social effects. [S][W][M]
Developing				
Emerging	I can identify the properties of some materials and know about CAD and CAM. [S][W][M]	Single user/client stated. [S][W][M]	Identification of the work of others but not used to inform ideas. [S][W][M]	Some understanding of the impact on society. [S][W][M]

DESIGNING

Level	Creativity	Communication/CAD	Modelling	Materials
Excelling	Creative and imaginative ideas have been developed accurately, considering functionality, aesthetics and innovation. [S][W][M]	Detailed experimentation and development work through a range of 2D/3D techniques (including CAD where appropriate). [S][W][M]	Development of at least one model, that is fit for purpose. [S][W][M]	Appropriate materials and components selected with suitable research into their working properties. [S][W][M]
Exceeding				
Achieving	Design ideas have been developed with some reference to functionality, aesthetics and innovation [S][W][M]	Some basic experimentation and development work through a basic range of 3D techniques (including CAD where appropriate). [S][W][M]	Development of at least one model. [S][W][M]	Some materials/components selected with basic research into their working properties. [S][W][M]
Developing				
Emerging	Design ideas have been developed. [S][W][M]	Develop work using simple 2D drawing techniques (including CAD model where appropriate). [S][W][M]	Limited development of one model. [S][W][M]	Limited consideration of the materials selected. [S][W][M]

MAKING

Level	Skill	Tool use	Quality	Quality Control
Excelling	Your prototypes shows a high level of making/finishing skills that are appropriate, ensuring the majority of specified tolerances have been met. [S][W][M]	Use of relevant tools, materials and equipment that have been operated skilfully and safely. [S][W][M]	You work independently to produce high quality prototypes [S][W][M]	The use of Quality Control is evident ensuring your prototypes are accurate [S][W][M]
Exceeding				
Achieving	You produce complete prototypes that are mainly within tolerance [S][W][M]	Tools, materials and equipment have been operated correctly and safely but sometimes requiring guidance. [S][W][M]	Your prototypes show good quality and finish and are manufactured with some guidance [S][W][M]	Basic Quality Control is evident throughout the manufacture of your prototypes. [S][W][M]
Developing				
Emerging	You produce mostly complete prototypes. [S][W][M]	Tools, materials and equipment have been used but needed close supervision and guidance. [S][W][M]	You can make a basic prototype with lots of guidance. [S][W][M]	You can explain one Quality Control check that you have made. [S][W][M]

EVALUATING

Level	Design Spec	Manufacturing Spec	Iterations	Testing
Excelling	A design specification with justification linking to their own and others considerations, wants and interests [S][W][M]	A manufacturing specification covering all essential aspects, justified and linking to their prototype(s) to inform manufacture. [S][W][M]	Evidence that most iterations are as a result of considerations linked to analysis and evaluation of the prototype(s). Reflects upon feedback received from other people. [S][W][M]	Most aspects of the prototype(s) have been tested against the design brief or specification (including some third party testing). You have made modifications throughout the project. [S][W][M]
Exceeding				
Achieving	A basic design specification with some justification [S][W][M]	Basic manufacturing specification has been produced with some justification and links to your prototype(s) [S][W][M]	Iterations shown to be basic with some consideration of analysis and evaluation of the prototype(s). [S][W][M]	You have tested the prototype against the brief or specification to see how well it works. [S][W][M]
Developing				
Emerging	A simple design specification produced. [S][W][M]	Simple manufacturing specification produced. [S][W][M]	Iterations (changes) made to ideas. [S][W][M]	You have tested the prototype to see how well it works. [S][W][M]

	Health and Safety	Nutrition and Health	Source, Seasonality and Characteristics of Ingredients	Food Choice	Cooking Skills
Excelling	I can describe a range of control measures to reduce the risk of food poisoning.	I can evaluate the risks of not following a balanced diet and can give advice on which foods should be eaten or avoided to prevent diet related illness.	I am able to evaluate the impact of using incorrect ingredients, methods, temperatures and timings on the quality of outcomes.	I can evaluate the effects of budget on food choice and nutritional health.	I can make dishes that demonstrate higher level practical skills in preparation for year 9. I can demonstrate a range of finishing techniques that ensure my products are well presented and attractive. I can use accurate portion control.
Exceeding	I can describe some of the causes and symptoms of food poisoning and can name a range of food poisoning bacteria and sources.	I can apply my knowledge of diet and nutrition to adapt a recipe to suit individual needs.	I can explain the impact of different cooking methods on the nutritional content of foods (boiling, steaming, grilling and frying)	I can explain the causes of food poverty in the UK and the wider world. I can explain the benefits of the Fair Trade. I can describe how advertising and marketing affects food choices.	I can work independently using my own recipe. I am able to independently resolve problems that arise during practical work. I can work with accuracy and precision. I can prepare well-presented dishes
Achieving	I can explain the causes of cross contamination and food poisoning and how they can be prevented (linked to storage, cooking and reheating). I can demonstrate high levels of food hygiene when preparing foods I can explain the difference between a best before date and a use by date.	I can describe the nutritional needs of different groups of people (life stages, allergies and intolerances) I can explain how the information on food packaging can be used to make healthy choices	I can describe the physical, sensory and nutritional properties of the ingredients in my recipes.	I can explain why individuals choose or avoid foods based on their beliefs/ethics including animal welfare. I can explain the benefits of choosing organic produce.	I can follow a recipe independently. I am able to select the most appropriate equipment for the practical task. I can prepare dishes that demonstrate a range of more complex food preparation and cooking techniques I can taste and season foods. I can judge when foods are cooked/ready.
Developing	I can identify possible hazards and suggest how they can be made safe. I am able to use the cooker safely and independently. I can use a range of kitchen equipment safely and independently. I can explain how and where to store foods correctly.	I can explain what makes a healthy diet using the Eatwell Guide and 8 tips for healthy eating. I can identify the function and sources of a range of nutrients. I can explain energy balance and the importance of diet and exercise in maintaining a healthy weight.	I can name a range of foods within each commodity group. I know that foods are processed to create products and can explain the difference between primary and secondary processing.	I know that people choose food for different reasons including budget. I can explain the benefits of eating seasonal produce. I can explain food miles and the effect they have on the environment.	I can demonstrate a range of basic food preparation and cooking techniques. I can follow a recipe with guidance and prompts.
Emerging	I can prepare myself and my work area for practical work. I can use and clean basic equipment safely. I can identify which foods need to go in the fridge.	I can classify foods using the Eatwell guide. I can identify which foods I should eat less of and which foods I should eat more of. I can explain which foods cause the main health problems (sugar, fat, salt)	I can name some food commodities (cereals, fruit, vegetables, meat, fish, eggs, fats/oils, milk/dairy food products) I can identify whether foods are caught, reared or grown. I can identify foods that are primary processed and secondary processed.	I know that people choose food based on likes/dislikes. I can identify a range of UK seasonal produce. I know can identify a range of imported foods including Fair Trade products.	I can prepare and cook a recipe following teacher demonstrations and with support. I can identify and select the correct equipment for the task with guidance.

DESIGN AND TECHNOLOGY CURRICULUM PROGRESSION OVERVIEW		
	Year 10	**Year 11**
Autumn Term 1	Engineering- Understanding engineering. Engineering sectors and typical job roles. SMEs and MNC, supply chain (Unit 1A) Electronics - Systems and block diagrams, components and basic principles **Food** - **Catering** Introduction to the Hospitality and Catering industry. Job roles and responsibilities. Hygiene, safety and basic cooking skills. Begin to prepare, cook and serve food to a high standard. Learn new practical skills. Pastry making - shortcrust, puff, sweet pate sucre, filo. Cake making, cooking methods - roast tray bake. Blended sauce to make trifle. Roux sauce lasagne, pasta bake. Understand key culinary terms.	Engineering - CAD designs and engineering drawings, engineering sectors. Engineering materials and components (unit 2) Food - Decontextualize a LAB to create and plan a suitable meal (Eccleshall road brief, Chicken Kiev) Choux Styling lesson (teacake challenge) Western deli LAB, building Unit 2 Assessment class notes against the LAB, working through the different stages of a Controlled Assessment Task **Hair and Beauty** **Understand the hair and beauty sector. Unit 21578** Know the products, services and treatments provided in the hair and beauty sector. Explore the hair and beauty sector including;

	Hair and Beauty **Hair and beauty research project** **Unit 21570** Understand how to plan a hair and beauty research project Types of research projects The factors that must be considered when planning a research project. Explore methods of research and sources of information. Introduction to the hair and beauty salon. Skills including; Using tools and equipment safely, communication skills, confidentiality in the salon. **Child Development.** Introduction to course. Key terminology for R018/R019 and R020. R019 Students learn about the range of equipment and nutritional and hygiene requirements of children from birth to five years, and they demonstrate in a practical activity how these needs are met to promote a child's development and well-being LO1 Task 1 - Understand the key factors when choosing equipment for babies from birth to 12 months. LO2 Task 1: Understand the key factors when choosing equipment for children from one to five years	Hairdressing, barbering, afro caribbean hairdressing, beauty and spa therapy, nail services and makeup artistry. Types of hair products including shampoos, conditioners, styling products, perms and colours. Know the suitability to different hair types and conditions. Types of beauty products and their uses. **Child Development** R018: Health and well-being for child development This unit provides an overview of the roles and responsibilities of parenthood, from pre-conception through antenatal to postnatal care. Students develop an appreciation of the importance of creating the best conditions for a child to thrive. Learning Outcome 1: Understand reproduction and the roles and responsibilities of parenthood Learning Outcome 2: Understand antenatal care and preparation for birth

| Autumn Term 2 | Engineering- engineering sectors (1A), Drawing standards and methods. Produce an engineering product. Develop a suitable range of design ideas. (unit 1B)

Electronics - Resistive components and switching circuits

Food - **Catering**
Knowledge and understanding of the four C's and identify the causes and effects of different food poisoning bacteria.
Continue to develop cooking skills.
Bread making, swiss roll, ginger biscuits. Christmas cooking.
Understanding of an industrial kitchen, layout, plan, jobs, equipment, rules.

Hair and Beauty
Research project unit 21570
Be able to produce a research proposal for a hair and beauty project to include; topic area, reasons for choice, research methods, sources of information, timeline, outcomes and method of presentation.

Be able to carry out a hair and beauty research project using the correct research methods and sources of information. Produce a research log, reference information and analyse information and data collected.
Practical skills including; shampooing, conditioning, blow drying, roller setting. Hair products and their use and suitability.

Child Development:

R019 Students learn about the range of equipment and nutritional and hygiene requirements of children from birth to five years, and they demonstrate in a practical activity how these needs are met to promote a child's development and well-being
LO3 Task 2: Know the nutritional guidelines and requirements for children from birth to five years
LO4: Task 3 Be able to investigate and develop feeding solutions for children from birth to five years | Engineering - Learners will investigate the materials, components and processes used in the production of engineered products.

Food
Western Deli complete Task 3 Prepare, cook and present two dishes.
Filleting Fish
Pasta, Ravioli
Mock Controlled assessment, Flip flops

Hair and Beauty

Understanding the Hair and Beauty sector Unit 21578
Health safety and hygiene, explore legislation that governs health, safety and hygiene practices implemented by hair and beauty professionals.
Career opportunities in hair and beauty. This includes; Hairdresser, barber, beauty therapist, spa therapist, makeup artist, nail technician. Progression pathways and the differences between self-employed and contracted employment.

Career opportunities in related industries to include health and fitness, education, fashion design, theatre and media, retail and aesthetic nursing.

Training and education pathways including further and higher education, work based learning, private training centres and degrees.
A full range of skills and attributes required by headband beauty professionals. The skills and attributes needed to provide high levels of customer service, communication, professional conduct, confidentiality and discretion. Skills to include creativity, dexterity and attention to detail.

Exam preparation and revision for January Exam.

Child Development
R018: Health and well-being for child development
This unit provides an overview of the roles and responsibilities of parenthood, from pre-conception through antenatal to postnatal care. Students develop an appreciation of the importance of creating the best conditions for a child to thrive. |

		Learning Outcome 3: Understand postnatal checks, postnatal provision and conditions for development Learning Outcome 4: Understand how to recognise, manage and prevent childhood illnesses Learning Outcome 5: Know about child safety

Spring 1	Engineering- Produce an engineering product (unit 1B), Modelling and development. Manufacturing methods and processes Electronics - Applications of diodes, combinational logic systems **Food** - **Catering** Knowledge and understanding on key commodities. Practical lesson to reinforce their use. Preparing, jointing and de-boning a chicken. Using it to embed different cooking methods, make a stock and serve the chicken with different vegetable accompaniments. Theory knowledge and understanding on healthy eating, nutrition and special dietary needs. **Hair and Beauty** **Research project unit 21570** Present a hair and beauty research project using the correct format. Analyse the research project recognise the strengths and weaknesses and make future recommendations. Practical skills including basic manicure and pedicure, skin care and basic facial service. Products and their uses and suitability. Child Development R019 Students learn about the range of equipment and nutritional and hygiene requirements of children from birth to five years, and they demonstrate in a practical activity how these needs are met to promote a child's development and well-being LO4: Task 3 Be able to investigate and develop feeding solutions for children from birth to five years Time for improvements to work and stronger links made to R018 Introduce R020: Understand the development of a child from birth to five years Students investigate the developmental norms of children from birth to five years and develop an understanding of the impact of play on the developmental norms. They apply and demonstrate their knowledge and understanding through practical activities	Engineering - Learners will investigate engineered products by using practical engineering skills and techniques, such as disassembly and assembly, observation and measurement. Food **Hair and Beauty** **Marketing in the hair and beauty sector unit 21581** Introduction to the key principles of marketing and factors that influence marketing within hair and beauty. Explore the importance of marketing and investigate how marketing can lead to customer satisfaction and retention. Learn key terminology such as marketing segmentation, marketing mix and marketing communication methods. Investigate factors including: Ethical factors, animal welfare and testing, social factors and standards of practice. Be familiar with a wide range of hair and beauty products, tools, equipment, services and treatments Gain an understanding of the 4Ps and how they are used to promote and sell hair and beauty products, treatments and services. Child Development R018 Exam January R018 Revision R019 improvements R020 Improvements

| Spring 2 | Engineering- Produce an engineering product (unit 1B), Modelling and development. Manufacturing methods and processes. Orthographic drawing and use of CAD/CAM equipment

Electronics - Timing Circuits, sequential systems

Food - <u>Catering</u>
Hair and Beauty
Responding to a Hair and beauty design brief unit 21583
Analyse the types of hair and beauty design briefs
Develop and present ideas for a hair and beauty design brief
Source information and develop ideas.Explore, generate and develop ideas and themes for designs. Be able to align ideas to a client's needs and a specific brief.
Practical skills including;
Plaiting, braiding, take ups, special occasion hair. Basic makeup application, makeup products and their uses.

Hair and Beauty
Responding to a hair and beauty design brief unit 21583
Present a design following a hair and beauty design brief
Investigate various ways of presenting design ideas, considering the positives and negatives of each type
Analyse and make suggestions for improvements for future designs

Child Development
R020: Understand the development of a child from birth to five years
Students investigate the developmental norms of children from birth to five years and develop an understanding of the impact of play on the developmental norms.
They apply and demonstrate their knowledge and understanding through practical activities
LO1: Task 1 Understand the physical, intellectual and social developmental norms from birth to five years
LO2: Task 2: Understand the benefits of learning through play | Engineering - Learners will produce solutions to problems using different combinations of practical engineering skills, including making as part of the engineering design and make process. Exam skills and preparation

Food

Hair and Beauty
Marketing in the hair and beauty sector unit 21581
Carry out market research.
Learn about primary and secondary research methods.
Investigate the importance of setting objectives and analysing research findings. Discover how businesses use outcomes of research and the features and benefits of products and services in promotional activities.

Child Development
R018 Revision - based on exam feedback
R019 improvements
R020 Improvements |
| Summer 1 | Engineering- Evaluation of product and process. (unit 1B)

Electronics - Interfacing digital and analogue systems, control circuits, | Engineering - Learners will investigate and create solutions to problems in response to given engineering briefs. |

Food - Catering
Students to complete a number of different practical practice tasks in readiness for their assessment.
Revise and embed the skills required to complete the task. Including understanding, justification, target group needs, nutritional requirements, time planning, shopping lists and costings.
Knowledge and understanding of the running and performance of a professional kitchen. Visit to catering establishments.

Hair and Beauty
Responding to a hair and beauty design brief unit 21583
Present a design following a hair and beauty design brief
Investigate various ways of presenting design ideas, considering the positives and negatives of each type
Analyse and make suggestions for improvements for future designs
Hair and Beauty
Understanding the hair and beauty sector
Practical skills
An introduction to hair perming and basic colouring services. Scalp massage. Methods of hair removal.

Child Development
R020: Understand the development of a child from birth to five years
Students investigate the developmental norms of children from birth to five years and develop an understanding of the impact of play on the developmental norms. They apply and demonstrate their knowledge and understanding through practical activities
LO3: Task 3: Be able to plan different play activities for a chosen developmental area with a child from birth to five years
LO4: Task 4 Be able to carry out and evaluate different play activities for a chosen developmental area with a child from birth to five years
Time to improve work and create stronger links to RO18

Food
Hair and Beauty
Marketing in the hair and beauty sector unit 21581
Plan promotional activities and develop promotional materials for hair and beauty products and services.
Investigate what to consider when planning promotional activities, such as the features and benefits, costs, unique selling point and appropriate places to promote.
Evaluate promotional activity and materials, identifying positives and negatives and make future recommendations.
Exam preparation and revision- Exam resit in May.

Child Development
R018 Revision - based on exam feedback
R019 improvements
R020 Improvements

| Summer 2 | Engineering- Focus on engineering materials and processes.

Electronics - Operational amplifiers

Food - <u>Catering</u>
Students develop confidence in planning, preparing and cooking their own dishes for a given task: children's party, business lunch, afternoon tea.
Deliver remaining high skill practical techniques - gelatine set mousse, choux pastry buns/eclairs, fresh fish preparation, cleaning, filleting, cooking methods, steaming, fish cakes and pie.

Hair and Beauty
Understanding the hair and beauty sector unit 21578
The types of hair and beauty businesses and the services and treatments they provide.
The importance of the hair and beauty sector including how it contributes to the UK economy and how it is linked to other industries.
Business ownership within the hair and beauty sector. The trade and professional organisations and their roles.
Practical Skills, creating a whole image, using hair makeup and nail design.

Child Development
LO4: Task 4 Be able to carry out and evaluate different play activities for a chosen developmental area with a child from birth to five years
Time to improve work and create stronger links to RO18
2 hour lesson - Coursework improvement for Submission R019 and R020 until June
1 hour lesson
R018: Health and well-being for child development
This unit provides an overview of the roles and responsibilities of parenthood, from pre-conception through antenatal to postnatal care. Students develop an appreciation of the importance of creating the best conditions for a child to thrive.

Learning Outcome 1: Understand reproduction and the roles and responsibilities of parenthood | Engineering - Exam preparation and revision

Food - Exam preparation and revision

Hair and Beauty
Revision and exam preparation for resit.
Practical Skills
Blow Drying, curling, perming, colouring methods.
Facials, makeup application, special occasion Hair styling.

Child Development
R018 Revision - based on exam feedback
R019 improvements
R020 Improvements
R018 Exam June
R019 resubmission June
R020 Resubmission June |

Assessment Objectives Design and Technology

	Design	Make	Evaluate	Technical Knowledge
Y10	1. Understand that all design and technological practice takes place within contexts which inform outcomes 2. 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 3. Use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation. 4. 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 5. Consider additional factors such as ergonomics and anthropometrics.	1. Develop and apply in-depth knowledge by selecting and working with appropriate materials and components in order to produce a prototype 2. Apply in depth knowledge 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. 3. Follow procedures for safety and write risk assessments. 4. Use 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 5. Use appropriate surface treatments and finishes for functional and aesthetic purposes	1. Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups. 2. Critically evaluate new and emerging technologies to inform design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment. 3. Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.	1. Understand the impact of new and emerging technologies on industry, enterprise, sustainability, people, culture, society and the environment, production techniques and systems. 2. Know how energy is generated and stored in order to choose and use appropriate sources to make products and to power systems. 3. Understand developments in modern and smart materials, composite materials and technical textiles. 4. Understand 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 5. Understand how the use of programmable components are used to embed functionality into products in order to enhance and customise their operation 6. Understand the functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces:

			7. Know how to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.
			8. Use learning from science and maths to help design and make products that work.

Y9				
	1. Work confidently within a range of relevant domestic, local and industrial contexts, such as the home, health, leisure, culture, engineering, manufacture etc. 2. Consider the influence of a range of lifestyle and consumer choices when designing products. 3. Take creative risks when making design decisions. 4. Analyse where human values may conflict and compromise has to be achieved. 5. Decide which design criteria clash and determine which should take priority. 6. Consider additional factors such as ergonomics and anthropometrics.	1. Produce costings spreadsheets for products they design and make. 2. Match and select suitable materials and their fitness for purpose. 3. Adapt their method of manufacture to changing circumstances. 4. Recognise when it is necessary to develop a new skill or technique. 5. Follow procedures for safety and understand the process of risk assessments. 6. Make independent choices when selecting and using a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely. 7. Apply a range of finishing techniques to a broad range of materials.	1. Evaluate the concept of circular economy approaches in relation to product development and consumption. 2. Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups. 3. Evaluate new and emerging technologies. 4. Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.	1. How to construct and use simple and compound gear trains to drive mechanical systems from a high revving motor. 2. How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines. 3. Use learning from science and maths to help design and make products that work. 4. Understand the properties of materials, including smart materials, and how they can be used to advantage.

Y8			
1. Use research and **begin to exploration**, such as the study of different cultures, to identify and **begin understand** user needs. 2. To identify and solve issues within a design development task. 3. Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of uses. 4. Use a variety of influences, to generate creative ideas and avoid stereotypical responses. 5. Use 2D and 3D to model and develop their ideas. 6. Use CAD software to validate their designs in advance of manufacture. 7. Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools. 8. Consider additional factors such as ergonomics and anthropometrics.	1. Select from a wider, more complex range of materials and components, taking into account their properties. 2. Make simple use of planning tools for instance Gantt charts, communicate their plans clearly so that others can implement them. 3. Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives. 4. Make independent choices when selecting and using CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality. 5. Follow procedures for safety and understand the process of risk assessments. 6. Make independent choices when selecting and using a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely. 7. Apply a range of finishing techniques to a broad range of materials.	1. Select appropriate methods to evaluate their products in use and modify them to improve performance. 2. Produce shorts reports making suggestions for improvements. 3. Evaluate products that they are less familiar with using themselves. 4. Evaluate products considering life cycle analysis. 5. Evaluate how products can be developed considering the concept of cradle to grave. 6. Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups. 7. Evaluate new and emerging technologies. 8. Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.	1. How to apply computing and use electronics to embed intelligence in products that responds to inputs. 2. How to control outputs such as actuators and motors. 3. How to use software and hardware to develop programmes and transfer these programmable components for example, microcontrollers. 4. How to make use of microcontrollers in products they design and manufacture themselves. 5. How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines. 6. Use learning from science and maths to help design and make products that work. 7. Understand the properties of materials, including smart materials, and how they can be used to advantage.

Y7			
1. Use research, such as the study of different cultures, to identify user needs. 2. Be able to outline a simple specification to inform design ideas and guide their thinking. 3. Use 2D packages to model their ideas. 4. Produce models of their ideas using CAM to test ideas. 5. Be able to independently generate creative ideas inform by stimulus using annotations to explain key features relating to brief/specification. 6. Consider additional factors such as ergonomics and anthropometrics.	1. Produce ordered sequences and schedules for manufacturing products they design detailing resources required. 2. Make use of specialist equipment to mark out materials. 3. Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives. 4. Select and use CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality. 5. Investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials. 6. Follow procedures for safety and understand the process of risk assessments. 7. Select and use a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely. 8. Apply a range of finishing techniques to a broad range of materials.	1. Evaluate their products against their original specification and identify ways to improve them. 2. Actively involve others in the testing of their products. 3. Evaluate products through disassembly to determine how they are constructed and function. 4. Evaluate the positive and negative impact that products can have in the wider world. 5. Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups. 6. Evaluate new and emerging technologies. 7. Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.	1. How to classify materials by structure e.g. hard words, soft wood, ferrous and non-ferrous, thermoplastics and thermosetting plastics. 2. Consider the physical properties of materials. e.g. brittleness malleability. 3. How to use simple electronic circuits incorporating inputs and outputs. 4. Consider textile fibre sources e.g. natural and synthetic. 5. How materials can be cast in moulds. 6. Make use of sensors to detect heat, light etc. such as thermistors and light dependent resistors. 7. How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines. 8. Use learning from science and maths to help design and make products that work. 9. Understand the properties of materials, including smart materials, and how they can be used to advantage.

Assessment Grids – Age Related Assessment Descriptors

Design and Technology

Scheme of Work	Design	Make	Evaluate	Technical Knowledge
Excelling *Working well above ARE* (Trajectory for Grade 8 – 9)	I can explain how Engineers/ designers from different sectors contribute /generate a product. I can create imaginative, creative and innovative ideas, fully avoiding design fixation and with full consideration of design functionality, aesthetics and innovation. I can produce detailed annotation that clearly justifies how I have considered the user/client needs and links directly to the context selected. I can produce a complex investigation into the work of others and use this to inform my designs.	I can develop an improved final solution using CAD and modelling in relation to the brief. I have correctly used tools, equipment and materials (including CAM where appropriate) have been consistently used or operated safely with a high level of skill. I can produce a high quality prototype that has the potential to be commercially viable and has been made to meet the needs of the end user. I have evidenced a constant use of quality control to ensure a high quality, accurate prototype. I have clearly shown where I have adapted my work to include feedback from QC checks and/or user.	I can fully justify the development of an improved final solution and evaluate use of the design process, with reference to the brief and peer review. I have a comprehensive understanding of testing, analysing and evaluating existing products and ongoing work. I used judgements for independent and external feedback to inform and record modifications that I make.	I have knowledge and understanding of the impact of new and emerging technologies from a user, designer and manufacturers point of view. I can discuss and explain the impact of resources consumption on the planet and measure taken to improve this. I can implement sensitive approach with design and evaluation, and avoid negative impact on individuals and groups. E.g inclusive design/religious beliefs. I can identify and explain when/why and how various production techniques and systems are used in manufacture. For example, automation, JIT.

| Exceeding

Working beyond ARE

(Trajectory for Grade 6 – 7) | I research and explore relevant information based on the users needs.

I know how to use social, moral and cultural information to understand the user more clearly.

I can independently solve design problems and understand how to develop problems that are given to me.

I have developed a specification that allows me to be innovative, functional, and create an appealing design that responds to the users needs.

I have used a variety of approaches, for example, biomimicry and user centred design which has generated creative ideas that avoid stereotypical response to the brief. | I can select specialist tools in my practical and my choices are justified.

I justify the reasons for my choice of materials, taking into consideration their properties.

I justify the process that I choose to make my product.

I can use CAM in my work.

I am accurate and precise when I work.

I can work very safely and can coach others to do. | I can compare and contrast existing products, analysing them and explaining how this will influence my design.

I understand and can explain developments in DT, for example use of robotics in manufacturing.

I test, evaluate and refine my ideas and products against a specification. I always take into account the views of users/groups.

I understand the responsibilities of designers and engineers and clearly show this in my work.

 This could include, inclusive design, sustainability etc.

I can evaluate the impact of my product on individuals, society and the environment. | I understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.

I understand how more advanced mechanical systems are used in my products and enable changes in movement and force.

I understand how more advanced electrical and electronic systems can be powered and used in my product.

I apply computing and use electronics to ebed intelligence in my product that respond to inputs, and control output, using programmable components. |

Achieving *Working at ARE* (Trajectory for Grade 4 – 5)	I use research to state and describe the users needs. I can generate at least three different ideas, listing the constraints and develop them so they're improved following user/specification analysis. I analyse research to write a full specification which include users views/needs. I can select different methods to develop and improve ideas e.g. CAD/Modelling in response to the specification. I annotate ideas in response to the specification and clearly show how/why the design has been improved.	I can describe the tools and equipment I use. I can describe a range of materials that I use. I can describe the processes that I use. My work is generally accurate and pay attention to quality of finish. I always work safely adhering to workshop safety rules.	I analyse existing products on the market that are relevant and use these to inform my ideas. I can test and evaluate my product against the specification and improve my product as a result. I understand what my responsibilities are as a designer including reference to positive and negative impacts that products may have on the wider world. I can describe new technologies and smart materials and describe how they can help the environment and end product.	I can understand the properties of materials and select them to improve functioning solutions. I understand how electrical and electronic systems can be powered and used in their products. I apply computing and use electronics in my product that respond to input and controls outputs. I understand how mechanical systems are used in my product to enable changes in movement and force. I can independently select and use how CAD/CAM in design and manufacture of my product (identify between 2D and 3D).

Developing *Working towards ARE* (Trajectory for Grade 2 – 3)	I use research to identify the users needs. I can generate at least three different ideas and develop them so they're improved. I use research to write a basic specification. I use different methods to develop and improve ideas e.g. CAD/Modelling. I annotate ideas so they're clear to others.	I can name the tools and equipment I use. I can name a range of materials that I use. I can list the processes that I use. My work is mostly accurate. I work safely adhering to workshop safety rules.	I look at existing products on the market that are relevant and use these to inform my ideas. I can test and evaluate my product against the specification. I understand what my responsibilities are as a designer and show this in my work. I know about new technologies and smart materials and know how they can help the user.	I can recall the properties of materials. I understand systems and control and know what an input and output is. I understand mechanical systems. I can select how CAD/CAM can be used in manufacture (identify between 2D and 3D).
Emerging *Working below ARE* (Trajectory for Grade U – 1)	I can outline how the product meets my own needs. I know what a specification is and can work from one. My ideas are sketched and labelled with basic notes.	I can prepare myself for practical. I can name some of the tools I use. I can use equipment safely. Practical work is reasonably accurate.	I look at products to help me with my ideas. I can outline what I designed and what I made and state improvements needed. I know what some of my responsibilities are as a designer. I know a bit about new technologies and smart materials and how they can help the user.	I can identify the properties of some materials. I understand a little about systems and control and know what an input and output is. I understand basic mechanical systems. I know how CAD/CAM can be used in manufacture.

Assessment Objective	Design AO1	Make (Include HandS) AO2	Evaluate AO3	Technical Knowledge AO4

(Assessment Objectives refer to Design and Technology Programmes of Study)

Wider Subject Curriculum – *enrichment, homework programs, quizzing, awards, trips, visits, reading / vocabulary lists, competition etc.*

Resources

Glossary of key terms, rules and formula - *to be spelt / used correctly*

Key Terms

Vocabulary	Description
Sustainability	Working in a way that will ensure a continued supply of resources and energy for future generations (renewable/non-renewable/finite).
Environmental	Concerned with the impact or change in the environment.
Aesthetic	Our perception of beauty including sight, sound, smell, touch (mainly visual for Product Design).
Texture	The feel, appearance or consistency of a surface, substance or fabric.

Durability	The ability of a material to be hard-wearing.
Hardwoods	Come from deciduous or broadleaf trees. They are generally slow growing, hard, sold by cubic meter then rough sawn to size or mould (dowel).
Softwoods	Come from coniferous trees with needles instead of leaves. They are generally faster growing, softer, easier to work with. Supplied in standard sizes that are either rough sawn or planed smooth (PSE).
One-off	Only one product is made at a particular time (usually high quality/unique).
Batch	A series of identical products are made together, in small or large numbers (usually for a specific event).
Mass production	Products made on a production line with each worker responsible for a particular stage. Products are made in larger numbers to reduce the cost of each item.
Prototype	An accurate or working representation of what the product will do.
Quality control	Guarantees the accuracy of a product (size, material quality/ visual features).
Quality Assurance	Checks the machines, systems and staff within an organisation that make the products.
Risk assessment	The likelihood of safety problems arising from an activity (in designing and making a product).

CAD	Computer aided design is a drawn product or part of a product on a software package that can then be exported to and CAM machine (Increases accuracy and ease of repeat cuts).
CAM	Computer aided manufacture, a machine that turns a digital drawing into numerical code that plots a path for an item to be cut/drilled/milled out of a section of material.
Thermoplastics	These soften when heated and can be reshaped.
Thermosetting plastics	Heated and moulded into shape these plastics cannot be reshaped with heat because the polymer chains have been interlinked.