TECHNOLOGY:
BIG Question: 'Can every problem be solved?'

Subject: Design and Technology: Textiles/Fashion and Textiles

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
7	*The Big Question:* *"Which is the priority...Function or Aesthetics?"*			*The Big Question* *"Are the solutions to the world's biggest problems already around us?"*		
	Content Introduction to Textiles, Health and Safety policies and practice, introduction to fibres and fabrics, exploration/investigation into their properties, secondary research.	Analysis of the brief, constructing a specification, initial designing, basic practical hand sewing skills, introduction to components, introduction to industry and working drawing.	Further detailed secondary research, basic practical hand sewing skills, introduction to components, evaluation and testing, /manufacturing specifications.	Introduction to machinery, basic machine sewing skills, introduction and use of a wider range of equipment, materials and components exploration. Introduction and research into Biomimicry.	Continuation of the investigation of biomimicry/sustainability, further in-depth analysis and construction of a specification, product analysis.	Development of design ideas, finalising design ideas,Practical bunting construction, introduction to past and present designers, collaborative working/practical work, further exploration/investigation of past and present designers and evaluation & testing.
	Skill development Research, investigation, analysis and conducting secondary research Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month) Mathematics/Science Links: Basic use of numbers/measurements	Skill Development: Designing, Basic measuring to a template, pinning, Mathematics/Science Links: Basic calculation of sides/pattern pieces, production of working drawing/lay plan. Anthropometrics, ergonomics. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Skill Development: Basic cutting skills, safe use of basic textiles equipment (fabric shears, pins, needles).Hand sewing (running stitch/over-stitch, introduction/use and application of some components. Conducting further detailed secondary research, development of designs, Mathematics/Science Links: Basic use of data to inform design decisions Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Skill development: Drawing/measuring pattern piece, basic machine sewing skills, development of hand embroidery stitches and understanding/use of a wider range of equipment/components and material. Exploration of solving design challenges taking inspiration from nature, Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month) Mathematics/Science Links: Drawing/measuring and use of angles when making pattern pieces	Skill Development: Exploration of solving design challenges taking inspiration from nature, further in-depth research, wider range of secondary research, in-depth analysis and specification construction. Mathematics/Science Links: Presentation of secondary research data. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Skill Development: Collaborative skills/working, exploration and analysis of past and present designers. finalising design ideas, Basic use of decorative techniques/enhancement of materials, further developed more advanced machine skills and decorative techniques Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month) Mathematics/Science Links: Calculation of cost Use of measurements and some geometry
	Assessment **Baseline Assessment** Secondary Research/Exploration of materials and their working properties.	Assessment: Making Assessment Manufacturing Specification and Working Drawing/lay plan	Assessment: Design Assessment Product Analysis Assessment Manufacturing Specification and Working Drawing/lay plan	Assessment: Practical Construction Assessment Theoretical Exam component assessment Use of specialist machinery assessment	Assessment: Task Analysis/Specification Assessment Product Analysis Assessment Mini NEA Task	Assessment: Design Assessment Use of specialist machinery assessment
8	The Big Question: "Is upcycling our solution?"			The Big Question: "Sustainability or quality?		

	Content: Recap/further development of understanding in Textiles/health and safety policies and practice, fibres and fabrics research and introduction into fabric construction, exploration/investigation into their fibre properties in relation to their construction, secondary research. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Investigation/exploration of global environmental issues, sustainability, the impact of industries and climate change, analysis of the brief, constructing a specification, developing advanced hand embroidery skills, Main Project construction (Sock Monkeys) Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Continuation of Project (sock monkey)- hand sewing skills, use of components and decorative techniques, user needs/evaluation and testing. Investigation of global issues, climate change & sustainability, designer responsibilities, exploration and secondary research into upcycling.Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Further in-depth analysis and construction of a specification, product analysis, design development, bag design & construction - hand/machine sewing skills, use of components and decorative techniques. Manufacturing specification & further depth into industry Evaluation/testing. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Investigation and exploration of the context, investigation of new and emerging technologies, drawing techniques - bag design & construction - hand/machine sewing skills, use of components and decorative techniques. Evaluation/testing. Designer responsibilities/industry. Anthropometrics and Ergonomics & Design/Fashion Cycles/Trends and production methods.Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Development of design ideas, finalising design ideas, collaborative working/practical work, evaluation & testing. Designer responsibilities/industry. Anthropometrics and Ergonomics & Design/Fashion Cycles/Trends and production methods. Smart/Technical and Composite Materials. Celebration of cultures. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)
	Skill development Research/investigation, analysis and conducting secondary research and fabric testing. Maths/Science Links: Use of number and percentages Consideration of costing	Skill development Further in-depth research, developing design proposals, production of working drawing into a range of pattern pieces, In-depth analysis, development of further advanced hand embroidery (chain stitch, blanket stitch, threaded running stitch). Constructing a hand made final outcome. In-depth evaluation/testing and user needs. Maths/Science Links: Calculation of size for pattern pieces.	Skill development Further development of the use and application/development of further advanced hand embroidery (chain stitch, blanket stitch, threaded running stitch). Constructing a hand made final outcome. In-depth evaluation/testing and user needs. . Maths/Science Links: Use of measurements and basic geometry	Skill development In-depth analysis, development of further advanced hand embroidery (chain stitch, blanket stitch, threaded running stitch). Constructing a hand made final outcome. In-depth evaluation/testing and user needs. Further development of secondary research strategies and the ability to further explore industry. Introduction to designer responsibilities and legislation. Maths/Science Links: Ethical factors and consideration of ecological and social footprint.	Skill development Exploration of solving design challenges taking inspiration from new and emerging technologies, further in-depth research, wider range of secondary research, in-depth analysis and specification construction. Anthropometrics, Ergonomics, design cycles. NEA skill development Maths/Science Links: Understand the appropriate use of materials, including textiles Calculation cost	Skill development Collaborative skills/working, finalising design ideas, further advance use of a wide range of decorative techniques/enhancement of materials, further developed more advanced machine and finishing skills and decorative techniques, introduction and celebration of cultures. NEA skill development Maths/Science Links: Classification of the types and properties of a range of materials. Use of measurements and more complex geometry
	Assessment **Baseline Assessment** Analysis Assessment Fabric investigation and Testing Assessment	Assessment Design Assessment Working Drawing/Technical Technical Drawing assessment	Assessment Practical Assessment Evaluation/Testing Assessment	Assessment Task Analysis/Specification Assessment Practical Assessment Development Assessment	Assessment Design Assessment Practical Construction Assessment Theoretical Exam component assessment	Assessment Design Assessment Practical Construction Assessment Theoretical Exam component assessment
9	*The Big Question* *"How can we make a difference? "*			*The Big Question* *"What are our biggest challenges?"*		
	Content Theoretical Content: Introduction to new and emerging technologies, energy generation and storage, developments in new materials and materials and their working properties. Recap on Fibres/Fabrics with basic overview of processing, construction and environmental impact, stock forms and production. Environmental impact of fibre processing and sourcing.	Content: Theoretical Content: Further exploration into the material categories, sources and origins of materials, Theory environmental impact of fabric and fashion industry including some designers. Decorative processes - (Social/moral and environmental links and further depth into designers) - Technical Designing.	Content: Theoretical Content: Materials (textiles-based) and further investigation of material properties, continuation of the use/joining of materials/components. Industrial and commercial practices, Technical drawing, anthropometrics & ergonomics in relation to the user. Inclusive & adaptive design. Design and	Content: Technical drawing, anthropometrics & ergonomics in relation to the user. Inclusive & adaptive design. Exploration into shaping and forming in the form of design development and sampling, introduction and exploration of the enhancement or materials/garments, finishes and fabric modification. Design and making principles. Identifying and investigating design possibilities, investigating	Content: Theoretical Content: Design and making principles Quality control and assurance production methods, including sustainable methods,energy generation. NEA Content: -Development stages of designing/making a product that is fit for purpose through designing, developing and realising ideas. Use of specialist techniques, processes, tools and equipment to	Content Theoretical content: Core technical principles (Raw materials, processing of fibres, stock forms and manufacturing/production factors) Design and making principles - Specialist technical principles review, NEA Content: Realising design ideas, use of a range of appropriate materials/components to produce

	Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	NEA – Section A and E - NEA – Section D – process/techniques and skill swatches Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	making principles (specialist tools and equipment) NEA – Section A and E - Fibre Testing Task Section D – process/techniques and skill swatches Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	processes and techniques. Quality assurance and control - industrial commercial practices and designer responsibilities. NEA – Section A and D- Fibre Small Scale/Diluted NEA – Section D – process/techniques and skill swatches - Begin Section E Construction.Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	shape, fabricate and construct a product that is fit for purpose. NEA – Section A and D- Fibre Small Scale/Diluted NEA – Section D – process/techniques and skill swatches - Continue with Section E Construction.Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	a basic prototype, analysis, evaluation and testing. Continuation of Section E, interlinking with analysis and reference to Section A. Elements of Section F also embedded.Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)
	Skill development Theoretical: Make effective design choices, Explore core technical knowledge The impact of new and emerging technologies How energy is generated and stored How energy is used, selection of products and power systems. The ability to consider environmental and social/moral impact with design decisions. Maths/Science Links: Taking into consideration the ecological and social footprint of materials. Ethical factors and consideration of ecological and social footprint. How to choose appropriate energy sources.	Skill development: Theoretical: Physical properties of a wide range of materials, their properties and their categorization Initial understanding of sources/origins and developments in new materials/technologies and fibres. The ability to consider environmental and social/moral impact with design decisions. NEA skill development Practical: Methods of joining and using components. Safe working practices. Maths/Science Links: Classification of the types of properties of a range of materials. Selecting appropriate materials. Extracting information from technical specifications. Ergonomics, anthropometrics	Skill development: Theoretical: How to use and work with materials/further investigate their properties. Practical: Technical drawing, use of CAD/CAM, demonstration of pattern drafting. Wider experimentation of the methods of joining and using components. Investigating different seam types and basic methods of disposing of fullness. Safe working practices. NEA skill development Maths/Science Links: Classification of the types of properties of a range of materials. Selecting appropriate materials. Extracting information from technical specifications. Ergonomics, anthropometrics	Skill Development: Theoretical: Basic modifications of materials for specific purposes, new and emerging technologies and a basic mechanical and chemical finishes. Students demonstrate a basic understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice as well as quality assurance and control - industrial commercial practices and design. NEA skill development Practical: Technical drawing, use of CAD/CAM, demonstration of pattern drafting. Identify basic design possibilities, link them to the context and conduct a basic investigation. Basic design brief and specification. Advanced construction skills, shaping/forming techniques. Students demonstrate basic use of enhancement of materials techniques/processes. Safe working practices.Ergonomics, anthropometrics Maths/Science Links: New and emerging technologies Modification of fibres	Skill Development: Theoretical: Develop design proposals. Conduct experimentation, learn how to combine ideas when designing as well as quality assurance and control - industrial commercial practices and design. Practical: Advanced construction skills, further skills of shaping/forming techniques. Basic use of enhancement of materials techniques/processes. Development, designing and making of a basic prototype. Safe working practices. NEA skill development Maths/Science Links: Calculation of material quantities and sizes. Economic considerations Ergonomics, anthropometrics	Skill development: Theoretical: Core and specialist technical principles. Production methods and commercial processes utilised to inform developments and sustainable design. Practical: Constructing their final prototype, involve shaping, fabrication, construction and assembly. Analyse and evaluate design decisions, outcomes, their first final prototype made by themselves. Consider wider issues in design and technology. Safe working practices. NEA skill development Maths/Science Links: Calculation of material quantities and sizes. Calculate surface area and volume eg material requirements for a specific use. Efficient material use. Ergonomics, anthropometrics
	Assessment **Baseline Assessment** New and emerging technologies Energy generation and storage Developments in new materials Material categories Materials and their working properties	**Assessment** Material categories Material sources and origins Fabric construction Making mark on the use of joining fabrics/components.	**Assessment** Materials (textiles based) Material properties in relation to structure Making mark on the use of joining fabrics/components. Making mark on shape/forming techniques	**Assessment** Design Development – Shape/forming techniques Modifications of materials/New and emerging technologies Mechanical and Chemical finishes (surface treatments) Section A (Identifying possibilities) NEA Assessment	**Assessment** Section B (Design brief and specification) Section C - Identifying design Ideas (2 Assessments) Section D – Developing Design Ideas (1 – Assessments) NEA Assessment	**Assessment** Section D – Developing Design Ideas (1 – Assessment)Section E (Realising design ideas) (2 Assessments) Section F (Analysing and Evaluating) (2 Assessments)

						NEA Assessment PPE Mock Exam
10	Content Theoretical content: Further exploration of Core Technical principles. Materials and their working properties - Material Categories and Material Properties – Students further investigate and embed understanding of sources of origins , conversion of fibres and materials from original source to stock forms, materials/fibre properties of natural, regenerated and synthetic fibres. Further exploration into new and emerging technologies, materials and their working properties and developments in new materials. Introduction to systems approach to designing and mechanical devices Specialist materials – Introduction to forces and stresses, stock forms, types and sizes (more depth in relation to textiles based materials) NEA Component: Students advance and develop Year 9 prototype, completing construction and developing into a commercially viable product.	Content: Theoretical content: Further exploration of Specialist technical principles: Ecological and social footprint, sources and origins, scales of production. Using and working with materials, selection of materials or components, specialist techniques and processes/ surface treatments and finishes. Further exploration into new and emerging technologies and how these further inform design decisions	Content: Theoretical Content: New and emerging technologies. Materials and their working properties Students investigate and explore both ecological and social footprints, focusing on the design and manufacture of products, social issues. Sustainability, Enterprise, environmental considerations and production methods, in addition to how new and emerging technologies can inform design decisions. Students further explore industry and production techniques and systems and understand influences and considerations of religion, culture, cycles/trends, production systems(CAD/CAM) and society.	Content: Theoretical content: Selection of materials and components Environmental, social and economic challenge Using and working with materials Development in new materials, specifically focusing on technological advances and development, smart/modern/technical and composite materials. Exploration and investigation of specialist techniques and processes such as commercial printing, dying, weaving and sewing. Design and making principles Selection of materials, tools and processes. Using and working with materials Development of design strategies and communication skills. Prototype development. Section D – Developing design ideas (Design developments, sampling, modelling, working drawing, manufacturing specification) Section E – Realising design ideas (prototype construction diary, final prototype fit for purpose) Interlink with Theory every week Stand alone lessons focus on theoretical content.	Content: Theoretical Content Specialist techniques and processes Scales of production Exploration and investigation of the work of others, specifically influential designers/movements and/or brands/companies. Design and making principles Selection of materials, tools and processes. Using and working with materials Development of design strategies and communication skills. Prototype development. NEA Content: Design and Making – Section F Analysing and evaluating (on-going analysis, final evaluation/analysis – Client review, testing, costing, social, moral, environmental evaluation, future developments and industry analysis) Interlink with Theory every week Stand alone lessons focus on theoretical content. RECAP/Further exploration on skills	Content: Students begin Year 11 NEA component: 50% overall qualification: AO1 Identify, investigate and outline design possibilities (Section A – 10 marks) Subject to the context, in-depth and exploration of context through a range of research methods.
	Skill development: Theoretical Content: Further exploration on impact of new and emerging technologies, further depth on how energy is generated and stored. Students know and understand the different stock forms types and sizes. Students are able to consider electronic systems including programmable components to provide functionality to products and processes, and enhance and customise their operation. Practical: Advanced construction skills, further skills of shaping/forming techniques.	Skill development: Theoretical Content: Further knowledge and understanding of the ecological and social footprint left by designers, develop understanding in the sources and origins of materials. Consideration of scales of production and referencing the processes involved. Maths/Science Links: ● Use of data to focus/inform research	Skill development: Theoretical Content: Demonstrate good understanding of new and emerging technologies. Classify the types and properties of a range of textiles based material and consider physical characteristics Further exploration and secure understanding of industry, enterprise and technological advances, socioeconomic influences and production methods. Maths/Science Links:	Skill development: Theoretical Content: Develop understanding on environmental, social and economic challenge Directly work with materials and components, eg producing a toile when designing garments. NEA Content: Develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values. Development of prototypes in response to client wants and needs and the requirements of the brief,	Skill development: Theoretical Content: Demonstrate how to select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes. NEA Content: Know how to and understand how to evaluate, reflect, and respond to feedback - Suggesting modifications to improve their product where possible. Maths/Science Links:	Skill development: Theoretical &NEA Content: Identify design possibilities identified and thoroughly explore and directly link to a contextual challenge demonstrating excellent understanding of the problems/opportunities. Comprehensive investigation into a wide range of research areas. Demonstrate excellent design focus and conduct extensive evidence that investigation of design possibilities. Maths/Science Links:

	Basic use of enhancement of materials techniques/processes. Development, designing and making of a basic prototype. Safe working practices. NEA skill development Maths/Science Links: ● Component names, interaction and operation ● The action of forces and how levers and gears transmit and transform the effects of forces. ● Mechanisms/ mechanical movement. ● Movement, changing the magnitude and direction of forces.	● Classification of the types and properties of a range of materials. Physical properties of materials related to use and knowledge applied when designing and making.	● Taking further into consideration the ecological and social footprint of materials. ● Scale of production, ratios, percentages, trigonometry and algebra.	developing creativity and considering function and aesthetics. Demonstrate safe working practices in design and technology. Maths/Science Links: ● Selecting appropriate materials. ● Understanding of how to choose appropriate energy sources. ● Scaling of drawings, working to datums. Material quantities required.	● Selection of materials and components based on ethical factors, taking into consideration the ecological and social footprint of materials	● Calculation of material quantities and sizes. ● Calculate surface area and volume eg material requirements for a specific use. ● Efficient material use, pattern spacing, nesting and minimising waste.
	Assessment **Baseline Assessment** New and Emerging Technologies Assessment Materials and their categories Assessment Sources and origins assessment Specialist Technical Principles/processes Assessment Surface treatments and finishes assessment Section D and E NEA Assessment following on from Year 9.	Assessment Ecological and social footprint assessment Scales of production Assessment Specialist Technical principles Assessment Responsible Design Assessment Socioeconomic factors and environmental considerations Assessment	Assessment New and emerging technologies Materials and their working properties assessment Specialist techniques and processes assessment Commercial processes assessment	Assessment Design and Making Principles Assessment Selection of materials assessment Design strategies assessment Communication of design ideas assessment Section D Assessment Section E Assessment	Assessment Section A Final Assessment Section B Final Assessment Section D Final Assessment Section E Final Assessment	Assessment Section A Final GCSE Year 11 Assessment - AO1 Identify, investigate and outline design possibilities (Section A – 10 marks) PPE Mock Exam
11	Theoretical Content: Specialist Technical principles & Design and Making Principles *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section A AO1: (10 marks) Identify, investigate and outline design possibilities to address needs and wants. Contextual Analysis, Primary/Secondary Research, Materials research & Testing, Designer Research, Client/User needs & Research, redesigning, analysis and evaluation of the above Section B A01 (10 marks) Producing a design brief & specification Design Brief, Fibre/fabric specification, design specification.	Theoretical Content: Specialist Technical Principles & Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section C A02 (20 marks) Design and make prototypes that are fit for purpose - Generating design ideas – Section D (20 marks) Developing design ideas (wide range of initial and developed design ideas using a range of design strategies).	Theoretical Content: Specialist Technical Principles - Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section D A02 (20 marks) Developing design ideas (wide range of initial and developed design ideas using a range of design strategies). Sampling, practical experimentation/selection and use of appropriate materials and components, working drawing and manufacturing specification. Section E A02 Realising design ideas (20 marks) Use of appropriate materials and components, prototype construction, prototype construction diary, quality control.	Theoretical Content: Specialist Technical Principles Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: NEA Final Submission Section E A02 Realising design ideas (20 marks) Use of appropriate materials and components, prototype construction, prototype construction diary, quality control. Section F A03 – (20 marks) Analysis and Evaluation – On going analysis/evaluation, final testing, client review, design brief/specification review, costing, social, moral, environmental analysis, future developments and industry analysis – Final Evaluation.	Theoretical Content: Core Technical Principles Specialist Technical Principles Design and Making Principles Exam Preparation NEA Content: Section F A03 – (20 marks) Analysis and Evaluation – On going analysis/evaluation, final testing, client review, design brief/specification review, costing, social, moral, environmental analysis, future developments and industry analysis – Final Evaluation. **NEA Deadline**	Theoretical Content: Core Technical Principles Specialist Technical Principles Design and Making Principles Exam Preparation

	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice. Conduct primary and secondary data to understand client and/or user needs, a range of market research, and consider human factors including ergonomics, focus groups and product analysis and evaluation as well as the use of anthropometric data and percentiles. Maths/Science Links: ● Analysis and presentation of performance data and client survey responses. ● Extracting information from technical specifications.	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: 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 at an advanced level, developing 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. Maths/Science Links: ● Graphic presentation of design ideas and communicating intentions to others. ● Determining the quantity of materials required.	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Demonstrate further innovative and creative flair throughout refining designs and experimentation which are effectively combined. Develop decision making skills, including the planning and organisation of time and resources when managing their own project work and develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes. Maths/Science Links: ● Determining the quantity of materials required. ● Calculation of quantities, measurement of materials and selection of components. ● Knowledge of properties of materials to be applied when designing and making.	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Explore and take design risks 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 of key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics. Maths/Science Links: ● Classification of the types and properties of a range of materials. ● Calculation of quantities, measurement of materials and selection of components.	Skill development Theoretical Content: Effective design choices made alongside demonstration of a breadth of core technical knowledge. Develop an in-depth knowledge and understanding of the specialist technical principles and are able to demonstrate and apply knowledge and understanding of designing and making principles at an advanced, secure level. NEA: Demonstrate the ability to conduct in-depth analysis and evaluation of prototypes and be able to reflect, responding to feedback when evaluating their own prototypes, suggest modifications to improve them through inception and manufacture and assess if prototypes are fit for purpose. Maths/Science Links: ● Understanding of properties of materials and how they need to be protected from corrosion through surface treatments and finishes. ● Selection of materials and components based on ethical factors, taking into consideration the ecological and social footprint of materials	Skill development Theoretical Content: Effective design choices made alongside demonstration of a breadth of core technical knowledge. Develop an in-depth knowledge and understanding of the specialist technical principles and are able to demonstrate and apply knowledge and understanding of designing and making principles at an advanced, secure level. Maths/Science Links: ● The GCSE Exam is at least 15% of the exam will assess maths • at least 10% of the exam will assess science
	Assessment: **Baseline Assessment** AO1 Identify, investigate and outline design possibilities Section A (10 marks) AO1 Identify, investigate and outline design possibilities Section B (10 marks)	Assessment: PPE Mock Exam A02 Design and make prototypes that are fit for purpose Section C – Generating design ideas (20 marks) Section D Developing Design Ideas (20 marks)	Assessment: A02 Design and make prototypes that are fit for purpose Section D Developing Design Ideas (20 marks) Section E A02 Realising design ideas (20 marks)	Assessment: A02 Design and make prototypes that are fit for purpose Section E A02 Realising design ideas (20 marks) A03 Analyse and Evaluate: Section F A03 – (20 marks) Analysis and Evaluation	Assessment: GCSE NEA Deadline – NEA Component Marked , moderated and submitted (50% of Final GCSE Grade) A01 Identify, investigate and outline design possibilities A02 Design and make prototypes that are fit for purpose A03 Analyse and Evaluate: Total 100 marks	Assessment: GCSE Design and Technology Exam component – 2hrs (50% of Final GCSE grading)
12	Theoretical Content Technical Principles: Materials and their applications – Classification of materials, investigating and testing materials	Theoretical content: Methods of joining and using components, the use of finishes, enhancement of materials, modern and	Theoretical Content: Design and Making principles: Design methods and processes, design theory, how technology and cultural changes can impact	Theoretical content: Design and Making principles: Accuracy in design and manufacture, Responsible design, Design for manufacture and project	Theoretical content: Technical Principles revisited in relation to NEA and Exam prep: Materials and their applications – Classification of materials,	Theoretical content: Technical Principles revisited in relation to NEA and Exam prep:

	and the performance characteristics of materials	industrial commercial practice, digital design and manufacture, the requirements for textile design and manufacture, enterprise and marketing in the enterprise of products and design communication. NEA Content: Exploration of seams, fibre/fabric testing interlinking with the use of finishes, enhancement of materials and the use of digital manufacture.	on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes, NEA Content: Exploration, practical experimentation, research and analysis of design theory and design processes .	management, National and international standards in product design. NEA Content: Exploration, research and analysis in responsible design, accuracy in design for manufacture and design for manufacture and project management Section A AO1 (30 marks) Identify, investigate & outline design possibilities Identifying and investigating design possibilities (20 marks)	investigating and testing materials and the performance characteristics of materials. Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes. NEA Content Section A AO1 (30 marks) Identify, investigate & outline design possibilities Identifying and investigating design possibilities (20 marks)	Design and Making Principles revisited in relation to NEA and Exam prep: Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: Section B AO1 (30 marks) Identify, investigate & outline design possibilities Producing a design brief and specification (10 marks) Section C A02 (50 marks) Design & make prototypes that are fit for purpose Development of design proposal(s) (25 marks)
	Skill development: Demonstrate advanced knowledge of materials and a wide range of applications, the classifications of fibres, workshop and industrial tests and advanced knowledge of fibres and their characteristics. Mathematics/Science Links: ● Fibre use based on physical and working characteristics ● Calculation of quantities of materials sizes and costs. ● Analysis of data obtained from testing ● Assessing physical shape and formation of fibres against performance.	Skill development Develop and demonstrate advance knowledge of joining methods, enhancement and industrial/commercial practice Develop advanced understanding of mechanical and chemical finishes, specific manufacturing methods and justify the use of digital manufacture. Mathematics/Science Links: ● Modification of fibres due to finishes/physical characteristics ● Use of datum points and geometry when setting out design drawings. ● The use of tolerances in dimensioning.	Skill development Critical analysis of existing products Develop in-depth knolwege on the design, development and manufacture of fashion clothing and textiles products to meet specification criteria Develop in-depth, advanced knowledge of how major developments in technology, history, designers , movements, socioeconomic influences have helped to shape product design and manufacture. Mathematics /Science Links: ● An awareness of scientific advancements/ discoveries and their potential development.	Skill development Demonstrate understanding of the responsibilities of designers and manufacturers. Apply personal judgement and relevant criteria in the appraisal of products and systems. Development of a prototype from design proposals. Mathematics /Science Links: ● The use of mathematics in developing pattern templates ● Determining quantities of materials. Calculation of sides and angles of products. Use of datum points and geometry when setting out design drawings. Use of geometry to create templates for designs. ● Calculations based on economies of scale. The impact of one way designs, nap and pattern on fabric layouts.	Skill development Develop the capacity to think creatively, innovatively and critically through focused research and the exploration of design opportunities arising from the needs, wants and values of users and clients Comprehensive range of strategies and techniques to thoroughly explore design opportunities. Mathematics /Science Links: ● Representation of data used to inform design decisions and evaluation of outcomes. ● The use of ergonomic and anthropometric data when designing products for humans and specific applications.	Skill development Take design risks, showing innovation and enterprise whilst considering their role as responsible designers and citizens. Develop intellectual curiosity about the design and manufacture of products and systems, and their impact on daily life and the wider world Work collaboratively to develop and refine their ideas, responding to feedback from users, peers and expert practitioners. Construct a comprehensive brief and specification but are able to rationalize design decisions Mathematics/Science Links: ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of fashion products
	Assessment PPE – Technical Principles Technical Principles Exam Questions set weekly	Assessment NEA Assessment: Fibre Testing, Exploration of enhancing materials. Technical Principles Exam Questions set weekly	Assessment: PPE – Design and Making Principles Exam NEA Assessment: Exploration and sample experimentation. Design and Making Exam Questions set weekly	Assessment: Technical Principles & Design and Making Exam Questions alternated and set weekly Section A AO1 (30 marks) Identify, investigate & outline design possibilities	PPE Technical Principles PPE Section A AO1 (30 marks) Identify, investigate & outline design possibilities Identifying and investigating design possibilities	PPE Design and Making Principles PPE Section B AO1 (30 marks) Identify, investigate & outline design possibilities Producing a design brief and specification (10 marks)

				Identifying and investigating design possibilities (20 marks)	(20 marks)	
13	Theoretical Content Technical Principles: Materials and their applications – Classification of materials, investigating and testing materials and the performance characteristics of materials (fabrics , fibres, yarns, all constructions construction, smart, technical and commercial) Design and Making Principles revisited in relation to NEA and Exam prep: Responsible design, Design for manufacture and project management, National and international standards in product design NEA Content: Section B AO1 (30 marks) Identify, investigate & outline design possibilities Producing a design brief and specification (10 marks) Section C A02 (50 marks) Design & make prototypes that are fit for purpose Development of design proposal(s) (25 marks)	Theoretical Content: Technical Principles revisited in relation to NEA and Exam prep: Methods of joining and using components, the use of finishes, enhancement of materials, modern and industrial commercial practice, digital design and manufacture, the requirements for textile design and manufacture, enterprise and marketing in the enterprise of products and design communication. Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes, NEA Content: Section C A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s) Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s)	Theoretical Content: Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes Accuracy in design and manufacture, Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s) Section E A03 (20 marks) Analyse & evaluate Analysing and evaluating	Theoretical Content: Technical Principles revisited in relation to NEA and Exam prep: modern and industrial commercial practice, digital design and manufacture, the requirements for textile design and manufacture, enterprise and marketing in the enterprise of products and design communication. Design and Making Principles revisited in relation to NEA and Exam prep: Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes Accuracy in design and manufacture, Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s) Section E A03 (20 marks) Analyse & evaluate Analysing and evaluating	Theoretical Content: Technical Principles – Focused revision for each pupil. Design and Making Principles – Focused revision for each pupil in preparation for the June exams. NEA Content: Final Completion of Section A AO1 (30 marks) Identify, investigate & outline design possibilities Identifying and investigating design possibilities (20 marks)Section B AO1 (30 marks) Identify, investigate & outline design possibilities Producing a design brief and specification (10 marks) Section C A02 (50 marks) Design & make prototypes that are fit for purpose Development of design proposal(s) (25 marks) Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s) Section E A03 (20 marks) Analyse & evaluate Analysing and evaluating	Theoretical Content: Technical Principles – Focused revision for each pupil. Design and Making Principles – Focused revision for each pupil in preparation for the June exams.
	Skill development Secure advanced, in-depth knowledge on classification/properties of fibres and fabrics properties. Demonstrate the ability to produce a comprehensive, detailed and well explained design specification which will fully guide the student's design thinking, supported by detailed project management, developed design proposals, exploration and experimentation with different	Skill development Secure advanced, in-depth knowledge on the effects of finishes in relation to fibre properties. Construct a comprehensive and fully detailed manufacturing specification Manufacturing allows for further development of design proposals in response to ongoing evaluation, testing and full consideration of contingency planning as	Skill development Create and analyse a design concept and using a range of skills and secure, advanced, in-depth knowledge to inform decisions Produce a high-quality prototypes/products Critical understanding of the wider influences on design and technology/fashion industry. Complexity or challenge is involved throughout the production of prototype(s). Excellent manufacturing skills	Skill development Design and make a prototype(s) which fully address the design brief, satisfying all major points of the specification and take into account all amendments/ modifications to their original design proposals as necessary. Evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed.	Skill development Testing at an advanced level in order to carry out focused and comprehensive tests with clear evidence of how the results have been used to inform the design and any modifications to the prototype. Secure the ability to produce a reasoned critical analysis of their final outcome. Comprehensively and critically evaluate their final prototype, fully justifying modifications and full consideration provided for how the	Skill development Secure all knowledge of both the technical and design and making principles at an in-depth, advanced level in order to prepare them for both the Technical principles Exam and the Design and Making Principles Exam component. Mathematics /Science Links: ● Determining quantities of materials ● Calculation of sides and angles as part of fashion and textiles product design

	materials, techniques and processes leading to an excellent quality design of a prototype for manufacture. Mathematics /Science Links: ● Understand how the physical structure of fabrics affects performance. ● Environmental factors can cause potential degradation. ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of fashion products	prototype development takes place. Mathematics /Science Links: ● Understand how the physical characteristics of fabrics can be modified by using mechanical finishes, ● Calculation of quantities of materials, costs and sizes	combined with an excellent understanding of the need for dimensional accuracy and precision to produce their final prototype(s). Mathematics /Science Links: ● Determining quantities of materials ● Calculation of sides and angles as part of fashion and textiles product design	Comprehensive evidence of analysis and evaluation throughout the process. Mathematics /Science Links: ● Use of ratios – pattern grading ● Representation of data used to inform design decisions and evaluation of outcomes. ● Presentation of market data, user preferences, outcomes of market research	prototype could be developed for different production methods ● Mathematics /Science Links: Representation of data used to inform design decisions and evaluation of outcomes. ● Understand the appropriate use of materials, including textiles, fibres, polymers, technical textiles, ceramics, and metals, based on their physical properties	● Use of datum points and geometry when setting out patterns ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of fashion products
	Assessment PPE – Technical Principles 2.5 hours Technical Principles Exam Questions set weekly Section C A02 (50 marks) Design & make prototypes that are fit for purpose Development of design proposal(s) (25 marks)	Assessment: Technical Principles Exam Questions set weekly Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s)	PPE PPE Design and Making Principles 1.5 hours Design and Making Questions set weekly Section D A02 (50 marks) Design & make prototypes that are fit for purpose Development of design prototype(s) Section E A03 (20 marks) Analyse & evaluate Analysing and evaluating	PPE PPE – Technical Principles 2.5 hours Design and Making Questions set weekly Section E A03 (20 marks) Analyse & evaluate Analysing and evaluating	NEA Final Submission 50% of A Level Award • Substantial design and make project • 100 marks • 50% of A-level	A Level Paper 1 Technical Principles • Written exam: 2.5 hours • 120 marks • 30% of A-level A Level Paper 2 Design and Making • Written exam: 1.5 hours • 80 marks • 20% of A-level

Subject: Food Preparation and Nutrition

	Half Term 1 Sept-Oct (7)	Half Term 2 Oct-Dec (7)	Half Term 3 Jan-Feb (6)	Half Term 4 Feb-April(5)	Half Term 5 April-May (7)	Half Term 6 May-July (7)
7	*The Big Question* "Are recipes essential?			The Big Question: "Do food choices determine our health?"		
	Content Health and safety, Washing up and practical preparation lesson, Introduction to the Eatwell GuidePRACTICAL COOK 1: Fruit salad Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 2: Croque-Monsieur, Introduction to Macronutrients, PRACTICAL COOK 3 Flapjack Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Introduction to Micronutrients PRACTICAL COOK 4 Chicken Fajitas, Continuation of Micronutrients & Introduction to manufacturing specification. Assessment Lesson Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 5 Pasta Salad,, Assessment Lesson, Baking methods. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 7 Fruit Crumble - Industry and processes - Manufacturing specification. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 9 Puff Pastry Pinwheels, PRACTICAL COOK 10 Fairy Buns, Continuation of Manufacturing specification & meeting the requirements of a food specification (graphics task). Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)
	Skill development	Skill Development	Skill Development:	Skill Development	Skill Development	Skill Development

	Students have basic understanding of how to prepare, cook and serve food safely. Students know the current guidelines for a healthy diet e.g. Eat well guide. Practical Skills: Students learn to demonstrate the basic skills: weigh/measure, preparing ingredients/equipment/work areas, knife skills(bridge, claw, peels, slice and dice as well as preparing fruit and vegetables. Mathematics/Science Links: Measuring Weighing Enzymic browning	Students are introduced and can identify macronutrients, their function and main sources. Practical Skills: Students learn to demonstrate the basic cooker skills (Using the Grill/Oven). Students begin to prepare, combine and shape foods as well as being introduced to cooking methods. Mathematics/Science Links: Measuring Weighing Introduction to the reasons why food is cooked and the different methods of heat transfer.	Students are introduced and can identify micronutrients, their function and main sources. Students can recall and explain the key stages of a technical practical lesson. Students demonstrate basic knowledge on food safety/cross contamination. Practical Skills: Students learn to demonstrate basic cooking methods as well as strengthening knife skills as well as learning how to prepare, cook and serve meat safely. Mathematics/Science Links: Measuring Weighing Changing properties of food.	Students are introduced and can identify micronutrients, their function and main sources. Students are introduced to raising agents and can identify baking methods Practical Skills: Students learn how to demonstrate different baking methods as well as learning how to prepare, cook and serve meat safely. Mathematics/Science Links: Measuring Weighing Shortening Microorganisms	Students are introduced to raising agents and can identify baking methods. Practical Skills: Students prepare, combine and shape foods as well as grasping further understanding on cooking methods. Mathematics/Science Links: Measuring Weighing Aeration Raising Agents	Students learn to design a food outcome in order to meet a specification and specific consumer needs Practical Skills Students learn how to demonstrate further cooking methods with different ranges of pastry, baking methods as well as continuing to learn how to prepare, cook and serve a wide range of meat safely. Mathematics/Science link: Measuring Weighing Aeration Raising Agents Further depth into heat transfer.
	Assessment **Baseline Assessment** Health and Safety/Food Hygiene	Assessment Practical Assessment	Assessment: Production Plan Theoretical component assessment (Exam technique)	Assessment Eatwell Guide & Micro/Macronutrients	Assessment Production Plan/Theoretical component assessment (Exam technique)	Assessment: Practical Assessment
8	The Big Question: “Dr Oetker VS Homemade”		The Big Question: “Can culture and religion dictate our diet?”		The Big Question: “Organic or every day value?”	
	Content: Health and safety and Food Hygiene, Macro and Micro Nutrients PRACTICAL COOK 1 Chicken Korma Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 2 Bacon & tomato pasta Cooking method and heat transfer, Assessment Lesson Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 3 Ginger Cakes Seasonality and sustainability production, organic and food miles Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 4 Flatbread PRACTICAL COOK 5 Pastry jam tarts Manufacturing specification Function and chemical properties of nutrients. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 6 CHINESE CHICKEN Cultures & Food Choice Manufacturing specification Function and chemical properties of nutrients. Assessment Lesson Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: PRACTICAL COOK 9 Marble cake Food Farming Design brief and specification. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)

	Skill development: Develop further understanding of food safety principles when preparing, cooking and serving food including further understanding on cross contamination/microorganisms. Students can make informed choices for a varied and balanced diet and develop understanding of macro/micro nutrients by discussing the effects of deficiency/excess. Practical: Students develop/strengthen cooking methods (boiling, simmering) and baking methods, as well as strengthening knife skills, preparing, cooking and serving meat. Students develop/strengthen baking method skills. Mathematics/Science Links: Measuring/weighing Coagulation, Microorganisms	Skill Development: Students develop knowledge on how heat is transferred to food through: • Conduction • Convection • Radiation. Students can recall and explain and justify key stages of a technical practical lesson including problems/solutions and developments. . Practical: Students develop/strengthen further cooking methods(boiling/simmering, as well as continuing to learn how to prepare, cook and serve a wide range of meat safely Mathematics/Science Links: Measuring Weighing Explanation as to why food is cooked and the different methods of heat transfer. .	Skill development: Students can state the seasonality of food and determine its suitability for specific dishes based on the above as well as flavour. Sustainability is explored with food production and consumption. Students are can identify different raising agents and can explain/compare baking methods. Practical Students develop/strengthen the ability to prepare, combine and shape foods as well as grasping further understanding on cooking methods. Students develop/strengthen further baking methods. Mathematics/Science Links: Measuring Weighing Raising agents	Skill Development: Students can identify a range of different farming techniques and be aim to make opinions on how animals are treated. Practical: Students are able to prepare, shape and form dough to produce a bread dish Mathematics/Science Links: Measuring Weighing Raising agents	Skill Development: Students can explain and justify key stages of a technical practical lesson including problems/solutions and developments. . Students explore and investigate food culture and religion and affect this has on food choice. Practical: Students develop/strengthen skills of preparing, combing, filling, shaping and cooking foods. As well as learning how to prepare, cook and serve meat safely. Mathematics/Science Links: Measuring Weighing Shortening	Skill Development: Students can explain and link ingredients to seasons in order to determine sustainability and suitability. Students explore industrial food production (incl. global) Students are able to produce an outcome in order to meet a specification and specific consumer needs. Students can identify different raising agents and can explain/compare baking methods. Practical Students develop/strengthen the ability to prepare, combine and shape foods as well as grasping further understanding on baking methods. Students learn how to demonstrate marbling. Mathematics/Science Links: Measuring Weighing Functions of ingredients Aeration
	Assessment: **Baseline Assessment** Food Hygiene/Cross contamination	Assessment Exam theoretical component assessment Practical Assessment	Assessment Food in relation to cultures and religions assessment Practical Assessment	Assessment Exam theoretical component assessment Practical Assessment	Assessment Exam theoretical component assessment Practical Assessment	Assessment Exam theoretical component assessment
9	**The Big Question** “Is functionality the only consideration?”				**The Big Question:** “Does cost reduce the quality?”	

	Content: Introduction to GCSE food The food safety principles when buying and storing food. Preparing, cooking and serving food. The food safety principles when preparing, cooking and serving food. Food safety – Microorganisms and enzymes. The signs of food spoilage and bacterial contamination PRACTICAL COOK 1: Savoury Mince Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	**Content:** Introduction to NEA - Focus: Enzymes - Introduction to the NEA component and initial investigations into enzymes & their role, function and properties within food. Factors which influence food choice To know and understand factors which may influence food choice e.g. religion, culture, ethical and moral beliefs and medical conditions. British and international cuisines How food labelling and marketing influences, in addition to nutritional age and health - Food choices. PRACTICAL COOK 2: Mac'n Cheese Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	**Content:** Macronutrients = What is Low and high biological value proteins protein complementation, protein alternatives Saturated fats and unsaturated fats Carbohydrates starch and sugars (monosaccharides/ disaccharides) and dietary fibre. Micronutrients What are the functions of Minerals and fat soluble and water soluble vitamins? The relationship and health risks between diet, nutrition and age. Continuation of NEA - Enzymes investigation and exploration. Hypothesis, science. investigations and practical investigation assessments. Completion of NEA. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	**Content:** Food Science Chemical properties of food. Functional = Protein denaturation, protein coagulation, gluten formation, foam formation. Carbohydrates, Gelatinisation, dextrinisation, caramelisation. Fats and oils, shortening, aeration, plasticity and emulsification. Food provenance, primary and secondary sourced food. PRACTICAL COOK 3: Carrot Cakes PRACTICAL COOK 4: Shortcrust pastry - Sausage Rolls Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	**Content:** Food provenance = Environmental impact and sustainability of food. Where and how ingredients are grown, reared and caught. Environmental issues associated with food plus looking into sustainability of food. Production choices and industrial food production - Choices, responsibility and consideration of the above. Exploring and investigating the different function and chemical properties of carbohydrates and fats (specifically in pastry) PRACTICAL COOK 5: Filo Top chicken or ham pie. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	**Content:** Food provenance = Pupils will learn primary and secondary stages of processing and production. Technological developments to support better health and food production including fortification and modified foods with health benefits and the efficacy of these. Introduction to Section D/E on NEA 2 -FOOD4PC - Sensory analysis, costing and economic feasibility. PRACTICAL 6: Jammy Biscuits - Development Trial Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)

	Skill development: Practical: Skill1: Weigh and measure, Accurate measurement of liquids and solids. Test for readiness. Use a temperature probe, knife, skewer, finger or poke test, bite, visual colour check or sound to establish whether an ingredient or recipe is ready Skill 2: Knife skills -Bridge hold, claw grip, peel, slice, dice and cut into even size pieces (ie batons, julienne). Skill 4: Using the oven Baking, roasting, casseroles and/or tagines, braising Skill 5: Using equipment, Use of blender, food processor, mixer, pasta machine, microwave oven. Skill 6: Cooking methods, Water based methods using hob. Mathematics/Science Links: Measuring Weighing What enzymes and bacteria are and how the grown.	**Skill development:** Practical: Skill1: Weigh and measure, Accurate measurement of liquids and solids. Test for readiness. Use a temperature probe, knife, skewer, finger or poke test, bite, visual colour check or sound to establish whether an ingredient or recipe is ready Skill 2: Knife skills -Bridge hold, claw grip, peel, slice, dice and cut into even size pieces (ie batons, julienne). Skill 4: Using the oven Baking, roasting, casseroles and/or tagines, braising Skill 8: Sauce making Reduction sauce to show how evaporation concentrates flavour. Eg tomato pasta sauce, curry sauce, gravy, meat sauce (including meat alternatives such as mycoprotein and textured vegetable protein) to show how evaporation concentrates flavour and changes the viscosity of the sauce. Mathematics/Science Links: Measuring Weighing Heat transfers	**Skill development:** Practical: Skill1: Weigh and measure, Accurate measurement of liquids and solids. Relevant and required NEA skills revolving around enzyme based investigations. Mathematics/Science Links: Measuring Weighing How macronutrients and micronutrients work with the body	**Skill development:** Practical: Skill 1: Judge and Modify sensory properties. How to change texture and flavour, use browning (dextrinisation, caramelisation) and glazing, add crust, crisp and crumbs. Skill 5 Using equipment Use of blender, food processor, mixer, pasta machine, microwave oven. Skill 6: Cooking methods, Water based methods using hob. Skill 10: Dough Shaping and finishing Understand the chemical and scientific reasoning behind different baking method such as" creaming, denaturation etc) Skill 11: Raising agents Chemical raising agents The use of self raising flour, baking powder, bicarbonate of soda. Relevant and required NEA skills revolving around enzyme based investigations. Mathematics/Science Links: Measuring Weighing Cooking methods and Heat transfers The functional properties of protein, carbohydrates and fats.	**Skill development:** Practical: Skill 1: Presentation and food styling. Use garnishes and decorative techniques to improve the aesthetic qualities, demonstrate portioning, presenting and finishing Skill 3 Preparing fruit and vegetables Mash, shred, scissor snip, scoop, crush, grate, peel, segment, de-skin, de-seed, blanch, shape, pipe, blend, juice and prepare garnishes whilst demonstrating the technical skills of controlling enzymic browning, spoilage and preventing food poisoning (wash and dry where appropriate). Skill 10: Dough Shaping and finishing Understand the chemical and scientific reasoning behind different baking method such as" creaming, denaturation etc) Skill 8: Sauce making Reduction sauce to show how evaporation concentrates flavour. Eg tomato pasta sauce, curry sauce, gravy, meat sauce (including meat alternatives such as mycoprotein and textured vegetable protein) to show how evaporation concentrates flavour and changes the viscosity of the sauce. Relevant and required NEA skills dependent on Science investigation/NEA Tasks Mathematics/Science Links: Measuring Weighing	**Skill development:** Practical: Skill1: Weigh and measure, Accurate measurement of liquids and solids. Skill 6: Cooking methods, Water based methods using hob. Skill 10: Dough Shaping and finishing Understand the chemical and scientific reasoning behind different baking method such as" creaming, denaturation etc) Mathematics/Science Links: Measuring Numerical analysis & Costing. Weighing Gluten formations. Relevant and required NEA skills dependent on Science investigation/NEA Tasks
	Assessment: **Baseline Assessment** Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook.	Assessment: Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook.	Assessment: Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook. NEA Assessment	Assessment: Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook. NEA Assessment	Assessment: Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook. NEA Assessment	Assessment: PPE Exam questions based on the above content. Pupils are also assessed on their practical ability and development throughout each cook.
10	**Content:** Introduction to year 10 GCSE food	**Content:** NEA 1 A - Practice	**Content:** NEA 1 B – Practice	**Content:** NEA 1 B - Practice Continue Section B	**Content:** NEA 2 - Practice	**Content:** NEA 2 - Practice

	NEA – Food Science Investigation NEA 1 A – Practice Section A – Students carry out research into the ingredients to be investigated. Section B – Investigation Students carry out practical investigations, related to the hypothesis or prediction, which demonstrate understanding of how ingredients work and why. Exam theory Buying and storing food The food safety principles when buying and storing food.. Food safety – Microorganisms and enzymes • the growth conditions for microorganisms and enzymes and the control of food spoilage	Continuation of Section B – Students continue to carry out practical investigations, related to the hypothesis or prediction, which demonstrate understanding of how ingredients work and why. Section C – Evaluation Students will analyse and evaluate the results of the investigation and reflect upon their findings. Exam Theory Bacterial contamination Macronutrients Protein, fats and carbohydrates Interlink with Theory every week Stand alone lessons focus on theoretical content but at intertwined with NEA focus and practical skill development.	Section A - Research Students carry out research into the ingredients to be investigated. Section B – Investigations Students carry out practical investigations, related to the hypothesis or prediction, which demonstrate understanding of how ingredients work and why. Exam Theory Micronutrients Vitamins and Minerals The relationship between diet, nutrition and health • the major diet related health risks. The importance of hydration and the functions of water in the diet. Making informed choices when choosing ingredients to make recipes and menus. Taking health religion, morals and age into amount. Energy needs the basal metabolic rate (BMR) and physical activity level (PAL) and their importance in determining energy requirements. Interlink with Theory every week Stand alone lessons focus on theoretical content but at intertwined with NEA focus and practical skill development.	Section C – Evaluation Students will analyse and evaluate the results of the investigation and reflect upon their findings. Start NEA 2 – Plan, prepare and cook NEA Sections A – Research Students will research and analyse the: life stage/dietary group or culinary tradition related to the task. Section B – Demonstrating technical skills Exam Theory Food Science Why food is cooked and how heat is transferred to food. The reasons why food is cooked • the different methods of heat transfer. Selecting appropriate cooking methods Selection of appropriate preparation, cooking methods and times to achieve desired characteristics. How to use different raising Agents Chemical, mechanical, steam and biological (yeast). Interlink with Theory every week Stand alone lessons focus on theoretical content but at intertwined with NEA focus and practical skill development.	Section B – Demonstrating technical skills Section C Planning for final menu. Justifying their final 3 dishes and creating a detailed time plan. Exam Theory Food provenance Environmental impact and sustainability of food. Where and how ingredients are grown, reared and caught. Environmental issues associated with food. Primary and secondary stages of processing and production. how processing affects the sensory and nutritional properties of ingredients Interlink with Theory every week Stand alone lessons focus on theoretical content but at intertwined with NEA focus and practical skill development.	Section D: Making the final dishes Section E: Analyse and evaluate Students will carry out sensory evaluation and record the results for all of their practical dishes. Exam Theory Food provenance continued Technological developments Interlink with Theory every week Stand alone lessons focus on theoretical content but at intertwined with NEA focus and practical skill development.
	Skill development: Practical: Investigate the working characteristics and the functional and chemical properties of a particular ingredient through practical investigation. They will produce a report which will include research into 'how ingredients work and why'. Mathematics/Science Links: Measuring Weighing Science investigations into certain area/ingredients Food safety	**Skill development:** Students will conduct, analyse and evaluate practical investigations. They will produce a report which will include research into 'how ingredients work and why'. Practical: Use of forming/shaping dough -- Use technical skills of shortening, gluten formation, fermentation (proving) for bread & pastry Mathematics/Science Links: Measuring Weighing Analysis of data Working with gluten Shortening, lamination of fat. Raising agents	**Skill development:** Practical: Investigate in further depth the working characteristics and the functional and chemical properties of a particular ingredient through practical investigation. They will produce a further detailed report which will include research into 'how ingredients work and why'. Mathematics/Science Links: Measuring Weighing Macronutrients and micronutrients in the body.	**Skill development:** Students will independently conduct, and complete detailed analysis and evaluation of their practical investigations. They will produce a report which will include research into 'how ingredients work and why'. Practical: Use of forming/shaping dough -- Use technical skills of shortening, gluten formation, fermentation (proving) for pastry, as well as demonstrating a variety of ways to cook/prepare meat. Mathematics/Science Links: Measuring Weighing Shaping and form gluten in the dough.	**Skill development:** Practical: Students will prepare, cook and present a basic final menu of three dishes to meet the needs of a specific context. Students must select appropriate technical skills and processes and create 3– 4 dishes to showcase their skills. Mathematics/Science Links: Measuring Weighing Time planning of final menu	**Skill development:** Practical: students will prepare, cook and present a basic final menu of three dishes to meet the needs of a specific context. Students must select appropriate technical skills and processes and create 3– 4 dishes to showcase their skills. Mathematics/Science Links: Measuring Weighing Time planning of final menu Food 4 PC – calculating nutrition, costing and sensory analysis results.

				Marinated softening of the muscles to make it tender.		
	Assessment **Baseline Assessment** NEA 1 Section A NEA 1 Section B Exam questions test after topic	Assessment NEA 1 Section B NEA 1 Section C Exam questions will be assessed in the above theoretical topic/content.	Assessment NEA 1 Section A NEA 1 Section B Exam questions will be assessed in the above theoretical topic/content.	Assessment NEA 1 Section B NEA 1 Section C NEA 2 Section A Exam questions will be assessed in the above theoretical topic/content.	Assessment NEA 2 Section B NEA 2 Section C Exam questions will be assessed in the above theoretical topic/content.	Assessment NEA 2 Section D NEA 2 Section E Year 10 PPE Exam questions will be assessed in the above theoretical topic/content.
11	**Content:** **Introduction to year 11 GCSE Food preparation and nutrition.** NEA 1 – ***Total Marks 30*** Sections A – Research Students carry out research into the ingredients to be investigated. The research will demonstrate how ingredients work and why. The outcome of the research should clearly inform the nature of the practical investigation and be used to establish a hypothesis or prediction for the food investigation task. Section B - Investigations Students carry out practical investigations, related to the hypothesis or prediction, which demonstrate understanding of how ingredients work and why. Students will record the results of the practical investigation. Section C – Evaluation Students will analyse and evaluate the results of the investigation and reflect upon their findings. Explanations will demonstrate how the results can be applied in practical food preparation and cooking.	**Content:** NEA 2 – ***Total Marks 70*** Start NEA 2 Sections A – Research Students will research and analyse the: life stage/dietary group or culinary tradition related to the task. Section B – Demonstrating technical skills • Demonstrate technical skills in the preparation and cooking of three to four dishes.	**Content:** NEA 2 – ***Total Marks 70*** Section C Planning for final menu As a result of demonstrating technical skills, students will provide explanation for the final three dishes related to e.g. ingredients, processes, technical skills, nutrition, food provenance, cooking methods and portion size. A time plan will be produced for the final three dishes demonstrating dovetailing of different processes Section D: Making the final dishes Students will prepare, cook and present a menu of three dishes within a single period of no more than three hours. Section E: Analyse and evaluate Students will carry out sensory evaluation and record the results for all of their practical dishes. For the final dishes, students will carry out and record nutritional analysis, costing and identify improvements to their dishes.	**Content:** **Theoretical content:** Buying and storing food, The food safety principles when buying and storing food, Preparing, cooking and serving food, Bacterial contamination and food poisoning, Factors which influence food choice, Food choice related to religion, culture, ethical and moral beliefs and medical conditions, Food labelling and marketing influences, British and international cuisines, Food products from British tradition and two different cuisines, Macronutrients, Micronutrients, Vitamins and Minerals.	**Content:** **Theoretical content:** Students develop an advanced, higher level understanding of the follow topics: Food Science, Selecting appropriate cooking methods Selection of appropriate preparation, cooking methods and times to achieve desired characteristics. Functional properties or proteins, carbohydrates, fats and oils. Food provenance Environmental impact and sustainability of food. The primary and secondary stages of food processing and production. how processing affects the sensory and nutritional properties of ingredients, technological developments to support better health and food production including fortification and modified foods with health benefits and the efficacy of these.	**Content:** Theoretical knowledge of food preparation and nutrition from Sections 1 to 5 Exam component: 50% weighting for overall final GCSE qualification.
	Skill development: Investigate the working characteristics and the functional and chemical properties of a particular ingredient through practical investigation. They will produce a report which will include research into 'how ingredients work and why'. Students will conduct, analyse and evaluate practical investigations. They will produce a report which will include	**Skill development:** Students demonstrate advanced and higher level knowledge, skills and understanding in relation to the planning, preparation, cooking, presentation of food and application of nutrition related to the chosen task. Students will prepare, cook and present a final menu of three dishes within a single period of no more than three hours, planning	**Skill development:** Students demonstrate advanced and higher level knowledge, skills and understanding in relation to the planning, preparation, cooking, presentation of food and application of nutrition related to the chosen task. Students will prepare, cook and present a final menu of three dishes within a single period of no more than three hours, planning in advance how this will be achieved.	**Skill development:** Students develop an advanced, higher level understanding of the follow topics: Buying and storing food, The food safety principles when buying and storing food, Preparing, cooking and serving food, Bacterial contamination and food poisoning, Factors which influence food choice, Food choice related to religion, culture, ethical and moral beliefs and medical conditions, Food labelling and marketing	**Skill development:** Students develop an advanced, higher level understanding of the follow topics: Food Science, Selecting appropriate cooking methods Selection of appropriate preparation, cooking methods and times to achieve desired characteristics. Functional properties or proteins, carbohydrates, fats and oils. Food provenance	**Skill development:** Student demonstrate advanced, higher level theoretical knowledge of food preparation and nutrition from Sections 1 to 5 as well as exam technique and the ability to answer multiple choice and extended response questions on the above content in their GCSE exam component. Mathematics and Science links:

	research into 'how ingredients work and why'. Mathematics/Science Links: Measuring Weighing Science investigations into certain area/ingredients Analysis of data	in advance how this will be achieved. Mathematics/Science Links: Measuring Weighing Aeration, whisking, rubbing in.	Mathematics/Science Links: Measuring Weighing Aeration, whisking, rubbing in. Time planning of final menu Analysis of data	influences, British and international cuisines, Food products from British tradition and two different cuisines, Macronutrients, Micronutrients, Vitamins and Minerals. *Students will not be cooking at this stage onwards in their GCSE course due to focus on theoretical content in preparation for their final GCSE exam component* Mathematics/Science Links: Measuring Weighing	Environmental impact and sustainability of food. The primary and secondary stages of food processing and production. how processing affects the sensory and nutritional properties of ingredients, technological developments to support better health and food production including fortification and modified foods with health benefits and the efficacy of these. Mathematics/Science Links: Measuring Weighing	Percentages Ratios Use of graphs and data to inform responses The chemical and functional properties of food. Nutritional analysis Cooking methods. The roles of nutrients
	Assessment **Baseline Assessment** GCSE NEA 1 Deadline – NEA Component Assessed, Marked and moderated (30 total marks achievable out of 100 for the NEA components. Both NEA 1 (30 marks) and 2 (70 marks) = 50% of the Final GCSE Grade)	Assessment Mock PPE NEA 2 Section A NEA 2 Section B	Assessment GCSE NEA 2 Deadline – NEA Component Assessed, Marked and moderated (70 total marks achievable out of 100 for the NEA components. Both NEA 1 (30 marks) and 2 (70 marks) = 50% of the Final GCSE Grade)	Assessment: Exam questions will be assessed in the above theoretical topic/content weekly.	Assessment: Exam questions will be assessed in the above theoretical topic/content weekly.	Assessment GCSE Food preparation and nutrition. Exam component – 1:45hrs (50% of Final GCSE grading)

Subject: Design & Technology:(Resistant Materials)

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
7	*The Big Question:* *"Which is the priority...Function or Aesthetics?"*			The Big Question: "Do skills or processes determine the quality?"		
	Content: Introduction into general Technology Health and Safety, H&S in the workshop, Desk Tidy Project, Introduction to the design and manufacturing process, Design brief, task analysis, design specification Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Health and Safety Desk Tidy Project, Initial ideas, design developments, introduction to tools and equipment and skills, introduction to the first stages of the practical project. Exploration of drawing techniques. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Desk Tidy Project, develop into further stages of the project, Design Brief, constructing a specification, Designing – Geometric shapes Introduction into manufacturing processes/industry Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Product analysis, producing further developed design ideas, first and second stage of desk tidy construction/practical project. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Desk Tidy Project - Product manufactured and formed using a range of different processes. Exploration and introduction to different manufacturing processes and finishing techniques. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Desk Tidy Project Continuation of final stages of practical desk tidy project, testing and evaluating. Electronics: Assembly and mini schematic diagrams MINI Light project - Exploration and understanding of basic electronics. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)
	Skill development: Students begin to build and start to learn how to apply a basic repertoire of knowledge, understanding and skills in order to design and make a basic prototype for specific users.	Skill development: Students begin to build and learn how to apply a basic repertoire of knowledge, understanding and skills in order to design and make a basic prototype for specific users. Students are able to develop a basic specification in order to design functional	Skill development: Students learn how to evaluate and test their ideas/prototypes as well as the work of others. Drawing Techniques - Students introduced and begin to develop a range of different drawing techniques. Practical Skills:	Skill development: Students progress onto been introduced to and use a range of practical tools and equipment in order to produce a more demanding prototype Practical Skills: Students develop skills and learn to demonstrate a wider range of	Skill development: . Students progress onto been introduced to and use a range of practical tools and equipment in order to produce a more demanding prototype Practical Skills: Students develop skills and learn to demonstrate a wider range of	Skill development: Students learn how further critique, evaluate and test their ideas/prototypes as well as the work of others. Practical Skills: Students develop skills and learn to demonstrate a wider range of engineering practical skills

	Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing	products to respond to user needs. Drawing Techniques - Students introduced and begin to develop a range of different drawing techniques. Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing	Students develop skills and learn to demonstrate a wider range of engineering practical skills consisting of making a template, cutting with hand saw, filing, sanding (safe and proper use of the sanding disc), the correct use of PPE. Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing	engineering practical skills consisting of cutting with hand saw, cutting (safe and proper use of the Band saw), correct use of PPE, filing and sanding (safe and proper use of the sanding disc) Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing	engineering practical skills consisting of drilling (safe and proper use of the Pillar Drill), cutting tubes to length – use of hand saw, vacuum forming (safe and proper use of the Vacuum Former), trimming (safe and proper use of the Gerbil) Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing	consisting of drilling (safe and proper use of the Pillar Drill), cutting tubes to length – use of hand saw, vacuum forming (safe and proper use of the Vacuum Former), trimming (safe and proper use of the Gerbil) Basic understanding of electronics and schematic diagrams. Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing
	Assessment: **Baseline Assessment** Task Analysis/Specification	Assessment: Drawing Techniques Assessment Specification Assessment	Assessment: Practical Assessment Drawing Techniques and initial practical stage Assessment	Assessment: Practical Assessment Theoretical component assessment	Assessment: Practical Assessment Theoretical component assessment	Assessment: Theoretical exam component assessment Evaluation Assessment
	The Big Question: “Does material classification determine success?”					
8	Content: Clock Project: Recap of essential Health and Safety in the workshop Analysis of the design Brief, developing a specification, identifying and solving design problems, Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Clock Project: Researching the product around a theme, investigation into user needs, the study of different cultures and analysing the work of past and present professionals and others – with an emphasis on the Memphis theme, to develop and broaden their understanding. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Clock Project: Designing: The iterative design process; Developing and communicating design ideas using annotated sketches, detailed plans, 3-Dand mathematical modelling, oral and digital presentations and computer-based tools, Use of 2D Design in order to draw and laser cut the centre face of the clock. Testing: Testing, evaluating and refining their ideas and products against a specification. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Clock Project: Modelling: critique, evaluate and test their ideas and products and the work of other, constructing a prototype, understanding developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists, engineering materials and selecting from and using specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Clock Project: Making: Selecting from and using specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture, engineering materials, Environmental impact of materials and mechanical systems: Understanding how more advanced mechanical systems used in their products enable changes in movement and force (clock mechanism/pendulum/gears). Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Clock Project: Making: Selecting from and using specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture, electronic and electrical systems relating to a clock: light/sound and movement as inputs and outputs, applying computing and use electronics to embed intelligence in products that respond to inputs, testing/evaluating and refining designs Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)
	Skill development: Students are able to analyses a brief and develop a more detailed specification to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations as well as Identifying and solving their own design problems and understanding how to	Skill development: Students are able to research and explore/analyse the work of past and present professionals and others. Student can use research and exploration, such as the study of different cultures, and detailed research into Memphis to identify and understand user needs/inform design ideas.	Skill development: Students can develop, communicate and design ideas in a range of different forms (2D Design CAD) Student select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture Mathematics/Science Links:	Skill development: Students develop and demonstrate further understanding from Year 7 in the developments in design and technology as well as understanding engineering materials; their properties and applications: Selecting from and using specialist tools, techniques, processes, equipment and machinery in order to model and construct a prototype.	Skill development: Students select from and using a wider, more complex range of engineering materials and components as well as demonstrating further understanding and using the properties of materials and the performance of structural elements to achieve a functioning solution. Students develop understanding of more advanced	Skill development: Students are able to Investigate new and emerging technologies and demonstrate understanding of how more advanced electrical and electronic systems can be powered, as well as applying computing and use electronics Students are able to critique, evaluate and test their ideas and products and the work of others. Mathematics/Science Links:

	reformulate problems given to them Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms CAMs	Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms CAMs	Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms CAMs	Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms CAMs	mechanical systems used in their products: focus on forces. Mathematics/Science Links: Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms Forces CAMs	Ergonomics Anthropometrics Measuring and marking out Costing Mechanisms Forces CAMs
	Assessment: **Baseline Assessment** Analysis of the brief Specification assessment	Assessment: Design task assessment Modelling/Making Assessment	Assessment: 2D Drawing (CAD) Assessment Testing and Evaluating assessment	Assessment: Engineering materials applications and properties assessment Practical assessment	Assessment: Mechanical systems Assessment Practical Assessment	Assessment: Testing the final product Final Evaluation Assessment.
	The Big Question: “Do properties dictate functionality?”			The Big Question: “Is there always a solution?”		
9 DESIGN & TECHNOLOGY : RESISTANT MATERIALS	Content: Phone Holder prototype. - Working with polymers. - Project 1 Continuation of health and safety throughout different technical skills and introduction into new processes Design and making principles Selection of materials, tools and processes. Using and working with materials Development of design strategies and communication skills. Materials and their working properties - Material Categories and Material Properties – Students further investigate and embed understanding of sources of origins , conversion of polymers, metals/alloys and timbers and materials from original source to stock forms, materials properties of natural, regenerated and synthetic materials	Content: Phone Holder prototype. - Working with polymers. - Project 1 Study of relevant structures, material suitability and history of construction. Exploring and demonstrating processes, techniques and skills. Skill swatches Prototype development. – Realising design ideas (prototype construction diary, final prototype fit for purpose) Alternate and interlink with Theory every week Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Phone Holder prototype. - Working with polymers. - Project 1 Health and safety throughout different technical skills and introduction into new processes, engineering materials, Polymers, thermosetting, thermoforming polymers, processes and manufacturing of different material categories. - Students explore and demonstrate a wider range of plastic cutting, shaping, shearing and filing skills, polymer shaping skills and –Exploring and demonstrating processes, techniques and skills. Prototype development. – Realising design ideas (prototype construction diary, final prototype fit for purpose) Alternate and interlink with Theory every week Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Wooden Pull along mechanism prototype. - Working with Timbers/Metals and Alloys - Project 2 Development into new processes - Students explore and demonstrate a wider range of timber cutting, shaping, shearing and filing skills, timber shaping skills and –Exploring and demonstrating processes, techniques and skills. Energy Production methods and their environmental impact, Designing and its considerations. –Exploring and demonstrating processes, techniques and skills. Relative costing of engineering materials. Skill swatches Systems and approaches: mechanical devices, Cams and followers, pulleys, rotary systems. Alternate and interlink with Theory every week Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Wooden Pull along mechanism prototype. - Working with Timbers/Metals and Alloys - Project 2 Continuation of the development into new processes - Students explore and demonstrate a wider range of timber cutting, shaping, shearing and filing skills, timber shaping skills and –Exploring and demonstrating processes, techniques and skills. Energy Production methods and their environmental impact, Designing and its considerations. –Exploring and demonstrating processes, techniques and skills. Relative costing of engineering materials. Systems and approaches: mechanical devices, Cams and followers, pulleys, rotary systems. Alternate and interlink with Theory every week Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)	Content: Wooden Pull along mechanism prototype. - Working with Timbers/Metals and Alloys - Project 2 Continuation of the development into new processes - Students explore and demonstrate a wider range of timber cutting, shaping, shearing and filing skills, timber shaping skills and –Exploring and demonstrating processes, techniques and skills. Problem solving. Alternate and interlink with Theory every week Systems and approaches: mechanical devices, Cams and followers, pulleys, rotary systems. Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)

	Alternate between practical & theory each lesson (1 Practical & 1 Theoretical Lesson every month)					
	Skill development: Students will develop and strengthen practical experience of working with all of these polymers, exam knowledge refers to any of the properties listed. Students should also be able to demonstrate knowledge and understanding of how the properties of these polymers can change through: the addition of materials to form polymers; methods which can affect the thermoforming properties and th different categories of polymers (thermosetting and forming) Practical Skills: Working with steel flat bar Working from an engineering drawing, Measuring, Marking out, Cutting with a hand saw, Filing, bending, polymer forming, shaping. Mathematics/Science Links: Measurements Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students will develop and strengthen practical experience of working with all of these polymers, exam knowledge refers to any of the properties listed. Students should also be able to demonstrate knowledge and understanding of how the properties of these polymers can change through: the addition of materials to form polymers; methods which can affect the thermoforming properties and th different categories of polymers (thermosetting and forming) Practical Skills: Working with steel flat bar Working from an engineering drawing, Measuring, Marking out, Cutting with a hand saw, Filing, bending, polymer forming, shaping. Drilling (Safe and proper use of a Pillar drill) Correct use of PPE Mathematics/Science Links: Measurements Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students continue to explore and demonstrate a wider range of engineering processes, machine techniques and practical engineering skills. Students should also be able to demonstrate knowledge and understanding of how the mechanical properties of these materials can change through the: direction/alignment of reinforcement; matrix in which the reinforcement is placed; amount of reinforcement used & size and shape of reinforcement. Students will need to understand the benefits and drawbacks of each of the energy production methods listed including any possible environmental impact. Practical Skills: Shaping, finishing. Mathematics/Science Links: Calculation and selection of spindle speeds M2.3 Measurements Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students further explore, investigate and strengthen a wider range of knowledge and more advanced engineering machinery/equipment. Students will develop and strengthen practical experience of working with all of these timbers and manufactured boards, exam knowledge refers to any of the properties listed. Students should also be able to demonstrate knowledge and understanding of how the properties of timbers and manufactured boards can change methods which can affect the properties and the different categories of timbers (hard and soft wood & manufactured boards) Understanding and skills of finishing processes. Practical Skills: Working with timbers Working from an engineering drawing, Measuring, Marking out, Cutting with a hand saw, Filing, shaping. Mathematics/Science Links: Calculation of angles M1.6, M1.7 Calculation of: angles; tolerances & pressure or force. M1.1, M1.2, M1.5, M1.6, E10 Measurements Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students further explore, investigate and strengthen a wider range of knowledge and more advanced engineering machinery/equipment. Students will develop and strengthen practical experience of working with all of these timbers and manufactured boards, exam knowledge refers to any of the properties listed. Students should also be able to demonstrate knowledge and understanding of how the properties of timbers and manufactured boards can change methods which can affect the properties and the different categories of timbers (hard and soft wood & manufactured boards) Understanding and skills of finishing processes. Practical Skills: Working with timbers Working from an engineering drawing, Measuring, Marking out, Cutting with a hand saw, Filing, shaping.	Skill development Students are introduced to and demonstrate understanding of CAD/CAM, interlinked with basic use of more advanced CNC machines such as laser cutter and 3D printer. Exploration and demonstration of permanent and temporary fixing methods. Students develop and demonstrate the ability to problem solve: solve problems through a logical, systematic approach. Students further explore, investigate and strengthen a wider range of knowledge and more advanced engineering machinery/equipment. Students will develop and strengthen practical experience of working with all of these timbers and manufactured boards, exam knowledge refers to any of the properties listed. Students should also be able to demonstrate knowledge and understanding of how the properties of timbers and manufactured boards can change methods which can affect the properties and the different categories of timbers (hard and soft wood & manufactured boards) Understanding and skills of finishing processes. Practical Skills: Working with timbers Working from an engineering drawing, Measuring, Marking out, Cutting with a hand saw, Filing, shaping. Analyse and evaluate existing solutions to problems. Practical Skills: Working with polymers, Cutting, Shaping , Bending, Problem solving Mathematics/Science Links: Measurements Use of units Mechanisms CAMS

						Forces Anthropometric Ergonomics
	Assessment **Baseline Assessment** New and emerging technologies Energy generation and storage Developments in new materials Material categories Materials and their working properties	**Assessment** Material categories Material sources and origins Polymers Processes Practical assessment on resistant material processes/skills.	**Assessment** Materials (polymers) Material properties in relation to suitability and functionality Making mark on shape/forming techniques	**Assessment** Design Development – Shape/forming techniques Modifications of materials/New and emerging technologies Mechanical and Chemical finishes (surface treatments) Systems Section A (Identifying possibilities) NEA Assessment	**Assessment** Section B (Design brief and specification) Section C - Identifying design Ideas (2 Assessments) Section D – Developing Design Ideas (1 – Assessments) NEA Assessment	**Assessment** Section D – Developing Design Ideas (1 – Assessment)Section E (Realising design ideas) (2 Assessments) Section F (Analysing and Evaluating) (2 Assessments) NEA Assessment PPE Mock Exam
10 DT GCSE RES MAT	Content Theoretical content: Further exploration of Core Technical principles. Materials and their working properties - Material Categories and Material Properties – Students further investigate and embed understanding of sources of origins , conversion of polymers, metals/alloys and timbers and materials from original source to stock forms, materials properties of natural, regenerated and synthetic materials Further exploration into new and emerging technologies, materials and their working properties and developments in new materials. Introduction to systems approach to designing and mechanical devices Specialist materials – Introduction to forces and stresses, stock forms, types and sizes (more depth in relation to polymer/timber and metal based materials) NEA Component: Students advance and develop Year 9 prototype, completing construction and developing into a	Content: Theoretical content: Further exploration of Specialist technical principles: Ecological and social footprint, sources and origins, scales of production. Using and working with materials, selection of materials or components, specialist techniques and processes/ surface treatments and finishes. Further exploration into new and emerging technologies and how these further inform design decisions	Content: Theoretical Content: New and emerging technologies. Materials and their working properties Students investigate and explore both ecological and social footprints, focusing on the design and manufacture of products, social issues. Sustainability, Enterprise, environmental considerations and production methods, in addition to how new and emerging technologies can inform design decisions. Students further explore industry and production techniques and systems and understand influences and considerations of religion, culture, cycles/trends, production systems(CAD/CAM) and society.	Content: Theoretical content: Selection of materials and components Environmental, social and economic challenge Using and working with materials Development in new materials, specifically focusing on technological advances and development, smart/modern/technical and composite materials. Exploration and investigation of specialist techniques and processes such as commercial printing, dying and processing materials (injection moulding, vac forming, extrusion etc) Design and making principles Selection of materials, tools and processes. Using and working with materials Development of design strategies and communication skills. Prototype development. Section D – Developing design ideas (Design developments, modelling, working drawing, manufacturing specification) Section E – Realising design ideas (prototype construction diary, final prototype fit for purpose) Interlink with Theory every week Stand alone lessons focus on theoretical content.	Content: Theoretical Content Specialist techniques and processes Scales of production Exploration and investigation of the work of others, specifically influential designers/movements and/or brands/companies. Design and making principles Selection of materials, tools and processes. Using and working with materials Development of design strategies and communication skills. Prototype development. NEA Content: Design and Making – Section F Analysing and evaluating (on-going analysis, final evaluation/analysis – Client review, testing, costing, social, moral, environmental evaluation, future developments and industry analysis) Interlink with Theory every week Stand alone lessons focus on theoretical content. RECAP/Further exploration on skills	Content: Students begin Year 11 NEA component: 50% overall qualification: AO1 Identify, investigate and outline design possibilities (Section A – 10 marks) Subject to the context, in-depth and exploration of context through a range of research methods.

	commercially viable product.					
	Skill development: Theoretical Content: Further exploration on impact of new and emerging technologies, further depth on how energy is generated and stored. Students know and understand the different stock forms types and sizes. Students are able to consider electronic systems including programmable components to provide functionality to products and processes, and enhance and customise their operation. Practical: Advanced construction skills, further skills of shaping/forming techniques. Basic use of enhancement of materials techniques/processes. Development, designing and making of a basic prototype. Safe working practices. NEA skill development Maths/Science Links: ● Component names, interaction and operation ● The action of forces and how levers and gears transmit and transform the effects of forces. ● Mechanisms/ mechanical movement. ● Movement, changing the magnitude and direction of forces.	Skill development: Theoretical Content: Further knowledge and understanding of the ecological and social footprint left by designers, develop understanding in the sources and origins of materials. Consideration of scales of production and referencing the processes involved. Maths/Science Links: ● Use of data to focus/inform research ● Classification of the types and properties of a range of materials. Physical properties of materials related to use and knowledge applied when designing and making.	Skill development: Theoretical Content: Demonstrate good understanding of new and emerging technologies. Classify the types and properties of a range of textiles based material and consider physical characteristics Further exploration and secure understanding of industry, enterprise and technological advances, socioeconomic influences and production methods. Maths/Science Links: ● Taking further into consideration the ecological and social footprint of materials. ● Scale of production, ratios, percentages, trigonometry and algebra.	Skill development: Theoretical Content: Develop understanding on environmental, social and economic challenge Directly work with materials and components, eg producing a toile when designing garments. NEA Content: Develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values. Development of prototypes in response to client wants and needs and the requirements of the brief, developing creativity and considering function and aesthetics. Demonstrate safe working practices in design and technology. Maths/Science Links: ● Selecting appropriate materials. ● Understanding of how to choose appropriate energy sources. ● Scaling of drawings, working to datums. Material quantities required.	Skill development: Theoretical Content: Demonstrate how to select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes. NEA Content: Know how to and understand how to evaluate, reflect, and respond to feedback - Suggesting modifications to improve their product where possible. Maths/Science Links: ● Selection of materials and components based on ethical factors, taking into consideration the ecological and social footprint of materials	Skill development: Theoretical &NEA Content: Identify design possibilities identified and thoroughly explore and directly link to a contextual challenge demonstrating excellent understanding of the problems/opportunities. Comprehensive investigation into a wide range of research areas. Demonstrate excellent design focus and conduct extensive evidence that investigation of design possibilities. Maths/Science Links: ● Calculation of material quantities and sizes. ● Calculate surface area and volume eg material requirements for a specific use. ● Efficient material use, pattern spacing, nesting and minimising waste.
	Assessment **Baseline Assessment** New and Emerging Technologies Assessment Materials and their categories Assessment	Assessment Ecological and social footprint assessment Scales of production Assessment Specialist Technical principles Assessment	Assessment New and emerging technologies Materials and their working properties assessment Specialist techniques and processes assessment	Assessment Design and Making Principles Assessment Selection of materials assessment Design strategies assessment Communication of design ideas assessment	Assessment Section A Final Assessment Section B Final Assessment Section D Final Assessment Section E Final Assessment	Assessment Section A Final GCSE Year 11 Assessment - AO1 Identify, investigate and outline design possibilities (Section A – 10 marks) PPE Mock Exam

	Sources and origins assessment Specialist Technical Principles/processes Assessment Surface treatments and finishes assessment Section D and E NEA Assessment following on from Year 9.	Responsible Design Assessment Socioeconomic factors and environmental considerations Assessment	Commercial processes assessment	Section D Assessment Section E Assessment		
11 GCSE DT RES MAT	Theoretical Content: Specialist Technical principles & Design and Making Principles *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section A AO1: (10 marks) Identify, investigate and outline design possibilities to address needs and wants. Contextual Analysis, Primary/Secondary Research, Materials research & Testing, Designer Research, Client/User needs & Research, redesigning, analysis and evaluation of the above Section B A01 (10 marks) Producing a design brief & specification Design Brief, Material specification, design specification.	Theoretical Content: Specialist Technical Principles & Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section C A02 (20 marks) Design and make prototypes that are fit for purpose - Generating design ideas – Section D (20 marks) Developing design ideas (wide range of initial and developed design ideas using a range of design strategies).	Theoretical Content: Specialist Technical Principles - Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: Section D A02 (20 marks) Developing design ideas (wide range of initial and developed design ideas using a range of design strategies). Sampling, practical experimentation/selection and use of appropriate materials and components, working drawing, materials and processes, and manufacturing specification. Section E A02 Realising design ideas (20 marks) Use of appropriate materials and components, prototype construction, prototype construction diary, quality control.	Theoretical Content: Specialist Technical Principles Design and Making Principles: *(All of the above theory content interlinks with the current section of NEA delivered at this stage)* NEA Content: NEA Final Submission Section E A02 Realising design ideas (20 marks) Use of appropriate materials and components, prototype construction, prototype construction diary, quality control. Section F A03 – (20 marks) Analysis and Evaluation – On going analysis/evaluation, final testing, client review, design brief/specification review, costing, social, moral, environmental analysis, future developments and industry analysis – Final Evaluation.	Theoretical Content: Core Technical Principles Specialist Technical Principles Design and Making Principles Exam Preparation NEA Content: Section F A03 – (20 marks) Analysis and Evaluation – On going analysis/evaluation, final testing, client review, design brief/specification review, costing, social, moral, environmental analysis, future developments and industry analysis – Final Evaluation. **NEA Deadline**	Theoretical Content: Core Technical Principles Specialist Technical Principles Design and Making Principles Exam Preparation
	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Demonstrate their understanding that all design and technological activity takes place within	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values.	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Demonstrate further innovative and creative flair throughout refining designs and experimentation which are effectively combined.	Skill development Theoretical Content: Students secure knowledge and continue to develop advanced understanding of the following key principles Specialist Technical principles & Design and Making Principles (this is also applied throughout the NEA) NEA: Explore and take design risks to stretch the development of design proposals, avoiding clichéd or stereotypical responses. Consider the costs, commercial viability and marketing of products,	Skill development Theoretical Content: Effective design choices made alongside demonstration of a breadth of core technical knowledge. Develop an in-depth knowledge and understanding of the specialist technical principles and are able to demonstrate and apply knowledge and understanding of designing and making principles at an advanced, secure level. NEA: Demonstrate the ability to conduct in-depth analysis and evaluation of prototypes and be able to reflect,	Skill development Theoretical Content: Effective design choices made alongside demonstration of a breadth of core technical knowledge. Develop an in-depth knowledge and understanding of the specialist technical principles and are able to demonstrate and apply knowledge and understanding of designing and making principles at an advanced, secure level. Maths/Science Links: • The GCSE Exam is at least 15% of the exam will

	contexts that influence the outcomes of design practice. Conduct primary and secondary data to understand client and/or user needs, a range of market research, and consider human factors including ergonomics, focus groups and product analysis and evaluation as well as the use of anthropometric data and percentiles. Maths/Science Links: ● Analysis and presentation of performance data and client survey responses. ● Extracting information from technical specifications.	Use imagination, experimentation and combine ideas when designing at an advanced level, developing 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. Maths/Science Links: ● Graphic presentation of design ideas and communicating intentions to others. ● Determining the quantity of materials required.	Develop decision making skills, including the planning and organisation of time and resources when managing their own project work and develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes. Maths/Science Links: ● Determining the quantity of materials required. ● Calculation of quantities, measurement of materials and selection of components. ● Knowledge of properties of materials to be applied when designing and making.	demonstrate safe working practices in design and technology. Use of key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics. Maths/Science Links: ● Classification of the types and properties of a range of materials. ● Calculation of quantities, measurement of materials and selection of components.	responding to feedback when evaluating their own prototypes, suggest modifications to improve them through inception and manufacture and assess if prototypes are fit for purpose. Maths/Science Links: ● Understanding of properties of materials and how they need to be protected from corrosion through surface treatments and finishes. ● Selection of materials and components based on ethical factors, taking into consideration the ecological and social footprint of materials	assess maths • at least 10% of the exam will assess science
	Assessment: **Baseline Assessment** AO1 Identify, investigate and outline design possibilities Section A (10 marks) AO1 Identify, investigate and outline design possibilities Section B (10 marks)	Assessment: PPE Mock Exam A02 Design and make prototypes that are fit for purpose Section C – Generating design ideas (20 marks) Section D Developing Design Ideas (20 marks)	Assessment: A02 Design and make prototypes that are fit for purpose Section D Developing Design Ideas (20 marks) Section E A02 Realising design ideas (20 marks)	Assessment: A02 Design and make prototypes that are fit for purpose Section E A02 Realising design ideas (20 marks) A03 Analyse and Evaluate: Section F A03 – (20 marks) Analysis and Evaluation	Assessment: GCSE NEA Deadline – NEA Component Marked , moderated and submitted (50% of Final GCSE Grade) A01 Identify, investigate and outline design possibilities A02 Design and make prototypes that are fit for purpose A03 Analyse and Evaluate: Total 100 marks	Assessment: GCSE Design and Technology Exam component – 2hrs (50% of Final GCSE grading)
11 GCSE ENGINEERING 22-23 LEGACY	Content: Non-Examined Assessment (worth 40% of total GCSE) Analysis of mechanisms: Linkages & Conversion of motion, gears, Cams and followers, pulleys and bearings. Analysis of electronics: Electronic systems, Programmable devices, Interfacing components. The use of analogue to digital conversion (ADC) in a programmable device. Output components, Discrete components within a circuit. Simple programming for monitoring and controlling	Content: Non-Examined Assessment (worth 40% of total GCSE) Constructing a specification, Designing & Design Drawings: Both mechanical and electrical/ electronic, which must be drawn using current conventions such as drawings in: orthographic (3rd angle); 3D representation (isometric); assembly & section view.	Content: Non-Examined Assessment (worth 40% of total GCSE) Modelling: Predicting performance in any of the systems referred to in Systems. CAD – 2D Design: Use CAD to assist in the creation of a solution. Use Computer Numerical Control (CNC)/Computer Aided Manufacture (CAM) in the manufacture of a solution. CAD in both 2D and 3D. Examples of 2D being Circuit diagrams, PCB layout, orthographic views. 3D being solid modelling, isometric views. CAM can be 2D or 3D. Laser cutting, vinyl cutting, PCB routing or hole drilling, turning.	Content: Non-Examined Assessment (worth 40% of total GCSE) Making of final product: Select and safely use a range of appropriate: materials; parts; components; tools & equipment as well as demonstrate a range of engineering processes and technical skills. In order to manufacture a working solution, making of circuitry and evaluation of circuitry. Testing: Methods of testing and evaluating materials and structural behaviour under load, including determining tensile/compressive strength. Design a range of tests to assess the fitness for purpose and performance of a completed product. CAD – ProDesktop: Use CAD to assist in the	Content: Non-Examined Assessment (worth 40% of total GCSE) Production plan, Diary of Making Producing and following a plan Explaining the plan, Ensuring repeatability and using CNC Sequencing and quality control Health and Safety, Evaluation against the specification, Materials Testing and final evaluation.	Content: Sections 1–6 from the subject content. Revision of content taught in year 9 & 10 for GCSE exam worth 60% of total GCSE

	processes, analysis of research, analysis and evaluation of existing solutions to problems.		Rapid prototyping, milling/ routing.	creation of a solution. Use Computer Numerical Control (CNC)/Computer Aided Manufacture (CAM) in the manufacture of a solution.		
	Skill development: Students will investigate, analyse and evaluate throughout the portfolio and evidence all decisions made. Students will conduct in-depth analysis and evaluation of existing solutions to problems as well as producing in-depth analysis of mechanisms and electronics, demonstrating higher level knowledge of and the ability to apply this knowledge in order to produce a solution to a problem. Mathematics/Science Links: Ratio of simple gears and mechanical advantage Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: In this section students will demonstrate their ability to develop illustrated design ideas that conform to sector-specific conventions, use CAD effectively and clearly annotate their drawings. Students are to produce and work to a series of engineering drawings or schematics, students will also product a development and explanation of a detailed, annotated design idea using appropriate engineering drawings • drawings that comply with sector-specific standards and conventions • detailed CAD drawings for presentation. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students will demonstrate modelling using a range of techniques including 3D, graphical and mathematical. Students are able to explain their design solutions and demonstrate that the final outcome should function as desired. Students will be expected to use calculations, simulations and modelling either manually or with Computer Aided Design (CAD) to: design and test electronic circuits: calculate hydraulic/pneumatic forces. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Students will select and safely use a range of appropriate: materials; parts; components; tools & equipment. In order to manufacture a working solution. Students will then develop onto using appropriate processes in order to manufacture a working solution. Skill examples include: measuring; marking; turning; milling; drilling; forming; bending; casting; joining; fastening; folding; shaping & finishing. Students should take into account how areas for improvement/ modification could be identified and consider alternative solutions. Students developed CAD skills in both 2D and 3D. Students will be expected to use calculations, simulations and modelling either manually or with Computer Aided Design (CAD) to: design and test electronic circuits & calculate hydraulic/pneumatic forces. Mathematics/Science Links: Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric	Skill development: students will demonstrate their ability to produce and follow a production plan and explain the stages of production, consider repeatability and use CNC, explain the quality control measures taken and consider health and safety. Students will be able to produce and Students will work to necessary tolerances; demonstrating the ability to check tolerances through the use of tools (Vernier calipers, micrometers and depth gauges) & using software (CNC/CAM) to ensure that all parts/components fit together allowing the solution to function. Students will test and evaluate materials and their structural behaviour under load in order to ascertain suitable material(s) for a chosen component. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Sections 1–6 from the subject content. Though the 'Practical engineering skills' section will predominantly be assessed through the NEA, some questions in the written exam will relate to practical contexts and students will need to apply their understanding within these contexts. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics
	Assessment: Continuous Assessment against the assessment criteria and objectives for the NEA component	Assessment: Continuous – Continuous Assessment against the assessment criteria and objectives for the NEA component	Assessment: Continuous – Continuous Assessment against the assessment criteria and objectives for the NEA component	Assessment: Continuous Assessment against the assessment criteria and objectives for the NEA component	Assessment: Continuous Assessment against the assessment criteria and objectives for the NEA component	Assessment: Final GCSE Exam component (Externally Assessed) 60% of the overall GCSE qualification.
11 BTEC LEGACY - 22-23	Content: EXAM PREP Component 3: Responding to an engineering brief Students will be guided through a range of engineering briefs to	Content: EXAM PREP Component 3: Responding to an engineering brief Students will be guided through a range of engineering briefs to develop an understanding of	Content: EXAM PREP Component 3: Responding to an engineering brief Students will be guided through a range of engineering briefs to develop an understanding of how	Content: COURSEWORK Students will have now completed the exam and will use the rest of the term to amend any coursework in order to prepare for sampling from the exam board. This will also give students the opportunity to access	Content: **COURSE COMPLETION**	Content: **COURSE COMPLETION**

	develop an understanding of how to respond. They will develop skills and techniques and Apply in response to mock questions. Students will also evaluate and review the outcomes in line with the exam board marking criteria.	how to respond. They will develop skills and techniques and Apply in response to mock questions. Students will also evaluate and review the outcomes in line with the exam board marking criteria.	to respond. They will develop skills and techniques and Apply in response to mock questions. Students will also evaluate and review the outcomes in line with the exam board marking criteria. **EXAM** (Available Feb, May & June) Learners will be given a brief to carry out a practical set task before completing the three activities based on the practical task. An additional task, consisting of two activities, will target higher-order, planning, redesign and evaluative skills, and relate to independent scenarios.	higher level grades whether it be Pass, Merit or Distinction criteria. EXAM GRADES Exam grades returned by the exam board In the event of a student not gaining their required grade there will be an opportunity to re-sit in May or June.		
	Skill development: Understand how to respond to an engineering brief. Select skills and techniques in response to an engineering brief. Apply skills and techniques in response to an engineering brief. Evaluate and review the outcomes of the application of skills and techniques in response to an engineering brief. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Understand how to respond to an engineering brief. Select skills and techniques in response to an engineering brief. Apply skills and techniques in response to an engineering brief. Evaluate and review the outcomes of the application of skills and techniques in response to an engineering brief. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Understand how to respond to an engineering brief. Select skills and techniques in response to an engineering brief. Apply skills and techniques in response to an engineering brief. Evaluate and review the outcomes of the application of skills and techniques in response to an engineering brief. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: Skills are dependent of which unit students are working on this will be determined by the coursework tracker. Mathematics/Science Links: Arithmetic and numerical computation Equations Handling Data Measurements Use of graphs Use of units Mechanisms CAMS Forces Anthropometric Ergonomics	Skill development: **COURSE COMPLETION**	Skill development: **COURSE COMPLETION**
	Assessment : **Baseline Assessment** Exam section Assessments (Formative/peer and self assessment)	Assessment: Exam section Assessments (Formative/peer and self assessment)	Assessment: Exam section Assessments (Formative/peer and self assessment) **EXTERNALLY ASSESSED EXAM** (This will take place within this window, dates TBC by exam board)	Assessment: Students will complete coursework tracker as they progress through the tasks. This can be used as a self management tool prior to submitting work for assessment. **EXAM BOARD SAMPLING OF INTERNALLY ASSESSED WORK.**	Assessment: **COURSE COMPLETION**	Assessment: **COURSE COMPLETION**
12	Content:	Content:	Content:	Content:	Content:	Content:

BTEC LEVEL 3 LEGACY 22-23 ONLY	Unit 12: Delivery of engineering processes safely as a team (internally assessed) – Identification of common engineering processes and transforming ideas and materials into products or services, (1) Common engineering processes, (2) Human factors affecting the performance of engineering processes:	Unit 12: Delivery of engineering processes safely as a team (internally assessed) (1) Health and Safety requirements: The general contents of legislation and regulations or other relevant international equivalents and how they are satisfied by safe systems of work/procedures and (2) Health and safety risk assessment.	Unit 12: Delivery of engineering processes safely as a team (internally assessed - Principles of engineering drawing, Drawing conventions or other relevant international equivalents.	Unit 12: Delivery of engineering processes safely as a team (internally assessed) 2D Computer-aided drawing.	Unit 12: Delivery of engineering processes safely as a team (internally assessed), (1)Principles of effective team), and (2) Team set up and organisation:	Unit 12: Delivery of engineering processes safely as a team (internally assessed) (1)Preparation activities for batch manufacture or batch service delivery, (2)Delivery of manufacturing or service engineering processes:
	Skill development: Students are able to develop and demonstrate higher level, advanced understanding of the following: Transforming ideas and materials into products or services; A product and a service are closely aligned concepts; Common processes used to create engineered products; fitting; machining; fabrication; electrical; forming. Common processes used in engineering services,including: disassembly; inspection; systems servicing; installation and replacement. Understanding that human factors affect the productivity of processes, including conformance to quality standards, reliability and the safety of individuals; Understanding that human factors affect the performance of individuals and teams. Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic	Skill development: Students are able to develop and demonstrate higher level, advanced understanding of the following: Current Health and Safety at Work legislation; Current Reporting of Injuries, Diseases and Dangerous Occurrences Regulations(RIDDOR); Current Personal Protective Equipment(PPE) at Work Regulations; Current Control of Substances Hazardous to Health Regulations(COSHH); Current Manual Handling Operations Regulations(MHOR)Students develop onto demonstrating a higher level understanding in risk assessment in an engineering workshop for specific engineering processes, following the guidance from HSE (or other relevant international equivalents). Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus	Skill development: Students are able to develop and demonstrate higher level, advanced understanding and practical abilities which consist of the following: Attributes of orthographic projections, including: geometry; dimensions; tolerances; material; surface texture and scale as well as developing onto the standards including BS 8888 and BS 60617; title block/layout; views; line types; common features; circuit diagram symbols and components; lettering and abbreviations. Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits.	Skill development: Students are able to develop and demonstrate higher level, advanced Cad skills by using computer-aided design (CAD) system to produce engineering drawings and circuit diagrams, including: coordinates; drawing templates; layers; commands; cross-hatching Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits. The calculation of heat flows during the operation of heat pumps, calculation of changes in energy in engineering examples, and the application of the gas laws	Skill development: Students are able to develop and demonstrate higher level, advanced understanding of the following: Good communication; planning; motivation; working with others and the working environment. As well as demonstrating understanding of team development, the definition and the strengths and limitations of team members; allocation of responsibilities; timescales and objectives. Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits. The calculation of heat flows during the operation of heat pumps, calculation of changes in	Skill development: Students are able to develop and demonstrate higher level, advanced understanding and practical abilities which consist of the following: Delivery of manufacturing or service engineering processes (batch production) and understanding the requirements of production plans, specifications, engineering drawings and other technical documentation, including: operations; health and safety factors; processes; materials, parts and components; equipment and quality checks. Students also develop advanced understanding of engineered products, e.g. screwdriver, toolmakers' clamp, fabricated box/enclosure, outside calipers, ball joint splitter, clamp stand, assembling looms, in addition to been able to demonstrate the following: Selecting, setting up and using engineering equipment to manufacture engineered products, including: marking out processes; manual processes; machining processes; assembly processes; quantity production and measuring processes. Students are able to select, set up and use engineering equipment to deliver engineering services, including: disassembly/removal/strip processes; manual processes; assembly processes and

	Algebra Trigonometry Geometry Statistics Calculus The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits. The calculation of heat flows during the operation of heat pumps, calculation of changes in energy in engineering examples, and the application of the gas laws	The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits. The calculation of heat flows during the operation of heat pumps, calculation of changes in energy in engineering examples, and the application of the gas laws	The calculation of heat flows during the operation of heat pumps, calculation of changes in energy in engineering examples, and the application of the gas laws		energy in engineering examples, and the application of the gas laws	inspecting/testing processes at a higher, advanced level. Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus The calculation of material properties from the stress strain and load-extension graphs, and in the interpretation of equilibrium diagrams to determine phase changes and associated properties. The use of mathematical methods to calculate values in electronic circuits. The calculation of heat flows during the operation of heat pumps, calculation of changes in energy in engineering examples, and the application of the gas laws
	Assessment: Continuous assessment across criteria as set out by the specification and exam board	Assessment: Continuous assessment across criteria as set out by the specification and exam board	Assessment: Continuous assessment across criteria as set out by the specification and exam board	Assessment: Continuous assessment across criteria as set out by the specification and exam board	Assessment: Continuous assessment across criteria as set out by the specification and exam board	Assessment: Continuous assessment across criteria as set out by the specification and exam board
13 BTEC LEVEL 3 LEGACY 22-23 ONLY	Content: Engineering Product Design and Manufacture (externally assessed) Design challenges: Commercial-, regulatory- or public policy-based trends that challenge current technology or design, Reduction of energy wasted and material properties.	Content: Engineering Product Design and Manufacture (externally assessed) Design triggers, challenges, constraints and opportunities, and materials and processes: Mechanical power transmission: Characteristics of an engineering system that makes use of forces and movement that impacts on mechanical power transmission component selection when designing an engineering product. Manufacturing processes and the Processes for polymers)	Content: Engineering Product Design and Manufacture (externally assessed) Introduction to the brief into operational requirements and analysing existing products. Meeting customer needs during engineering design activity.). Regulatory factors that place limitations and opportunities on the design of engineering products.	Content: Engineering Product Design and Manufacture (externally assessed) Interpreting a brief into operational requirements and analysing existing products and market analysis, Performance analysis and Manufacturing analysis.	Content: Engineering Product Design and Manufacture (externally assessed) Design proposals: Initial and developed propositions to improve an engineering product. Communication of an initial and a developed proposition to improve an engineering product. Free hand sketching and diagrams (2D and 3D,Illustrations,technical), Graphical techniques and written skills. Using an iterative process to improve an engineering product.	Content: Engineering Product Design and Manufacture (externally assessed) Technical justification and validation of the design solution and validating designs.
	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding of the following: Design triggers, the triggers that stimulate including: market	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding of the following: Design triggers, challenges, constraints and opportunities, and materials and processes: Mechanical power	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding and skills which consist of the following: Design for a customer: Meeting customer needs during engineering design activity,	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding and skills which consist of the following: Engineering goals in terms of marketing when designing an engineering product, including:	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding and skills which consist of the following: Using an iterative design process Communication of initial and a developed proposition which	Skill development: Students demonstrate and develop an in-depth, higher level and advanced understanding and skills which consist of the following: Technical justification and validiation, statistical techniques as applied to engineering

	pull/technology push (product and process); demand; profitability; innovation; market research; product/process performance issues; sustainability(carbon footprint) and designing out risk. Students then progress onto developing and demonstrating knowledge of the following: Reducing waste during design of an engineered product; reduction of energy wasted during operation of an engineered product; reduction of physical dimensions; reduction of product mass; increase in component efficiency; energy recovery features; reduced product life cycle costs; integration of different power sources for vehicles; reduced use of resources in high-value manufacturing; sustainability issues throughout the product lifecycle (raw materials, manufacture, packaging and distribution, use and reuse, end of life) and designing out risk (for individual employees and customers). Materials, their properties and their applications: Properties, modes of failure, protection and lubrication of engineering materials and components that impact upon their selection when designing an engineering product, including: mechanical properties; physical properties; thermal properties; electrical and magnetic properties; behaviour of advanced materials (biomaterials, smart alloys, nano engineered materials) modes of failure; surface treatments and coating and	transmission: Characteristics of an engineering system that makes use of forces and movement that impacts on mechanical power transmission component selection when designing an engineering product Linkages (types, mechanical advantage, examples from nature) mechanical motion (linear, rotary, reciprocating, oscillating); power sources (mechanical, electrical, energy from nature and control of pwer transmissions sensors, actuators and motors. Characteristics and effects of manufacturing processes that impact on the selection of engineering materials and components when designing an engineering product, including: processes for metals additive, moulding, machining, forming, casting, powder metallurgy, joining, assembly). additive, casting, moulding, extrusion, thermo forming); processes for ceramics (additive, casting, forming); Processes for composites (layup, moulding, automated tow placement); effects of processing (recrystallisation, grain structure, alloying elements, material combinations, process parameters) and scales of manufacture(one-off, small batch, large batch, mass, continuous Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus	including: types of customer (internal, external); Product and service requirements (performance specifications, compliance to operating standards, manufacturing quantities, reliability/product support, product life cycle, usability, anthropometrics); product design specification/criteria(cost, quantity, maintenance, finish, materials, weight, aesthetics, product life cycle, sustainability, carbon footprint, reliability, safety, testing, ergonomics, usability, competition, market, manufacturing facility, manufacturing constraints, manufacturing processes) and commercial protection (patents, registration, copyright, trademarks). Regulatory factors that place limitations and opportunities on the design of engineering products, including: legislation, standards, codes of practice, national and international certification requirements; environmental constraints (sustainability, carbon footprint, product life cycle) and health and safety, security (product and process). Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus Unit 4 Engineering design the design calculations required to address a product need.	unique selling point(USP); benefits of the design and obsolescence. Engineering goals in terms of performance when designing an engineering product, including: product form; product functionality; technical considerations; choice of materials and components; environmental sustainability (impact, carbon footprint); interactions with other areas/components and likelihood of failure or wear. Engineering goals in terms of manufacturing when designing an engineering product, including: processes for manufacturing/assembly; manufacturing requirements; quality indicators; environmental sustainability (impact, carbon footprint) and design for manufacture. Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus Unit 4 Engineering design the design calculations required to address a product need.	including: technical design criteria; idea generation(context, creativity, range); initial design ideas(fitness for purpose, refinements, recognition of constraints);developed design idea(aesthetics, ergonomics, sizes, mechanical and electronic principles, material requirements, manufacturing processes, assembly arrangements, cost estimations, factor of safety, selection procedures for bought out components) and use of information sources. Students progress onto demonstrating graphic skills (charts, keys, shading, animation, symbols, conventions); written skills(annotation, technical language, interpreting results) and documentation(detailandassembly orthographicprojections,specifications,partslist, materials list, production plan, circuit/block diagrams, flowchart, design log). Students are able to use an iterative process to improve an engineering product at an advanced, higher level in detail, including: refining a task or process (analysing, adapting, enhancing) and cyclic process (logical non-linear approach, focus on product design specification/criteria). Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus Unit 4 Engineering design the design calculations required to address a product need.	problems, including: statistical measurement: discrete/continuous, mean, median, mode, variance and data handling: graphical representation (bar chart, pie chart, frequency table, histogram, cumulative frequency diagram or graph); frequency distributions (normal, skewed, standard deviation Technical justification and validation of the design solution. Students then progress onto validating designs at a higher more advanced level, by Rationalising choices made when generating a developed proposition to improve an engineering product, including: objective referencing against product design specification/criteria; objective referencing against weighted matrix; indirect benefits and opportunities; balancing benefits and opportunities with constraints(cost-benefit analysis, environmental benefits, health and safety risks, product life cycle considerations); design for manufacturing and further modifications(technology-led adaptations). Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus Unit 4 Engineering design the design calculations required to address a product need.

	lubrication (purposes, regimes) Mathematics/Science Links: The use of the following mathematical skills to solve engineering problems: Arithmetic Algebra Trigonometry Geometry Statistics Calculus Unit 4 Engineering design the design calculations required to address a product need.	Unit 4 Engineering design the design calculations required to address a product need.				
	Assessment: Continuous teacher assessment across criteria as set out by the specification and exam board	Assessment: Continuous teacher assessment across criteria as set out by the specification and exam board	Assessment: Set task of 60 marks, completed under supervised conditions (Attempt 1)	Assessment: Continuous teacher assessment across criteria as set out by the specification and exam board	Assessment: Continuous teacher assessment across criteria as set out by the specification and exam board	Assessment: Set task of 60 marks, completed under supervised conditions (Attempt 2 – if required)
12 A2 ProdDes	Theoretical Content Technical Principles: Materials and their applications – Classification of materials, investigating and testing materials and the performance characteristics of materials Material categories - Focusing specifically on timbers, metals/alloys and polymers. NEA Content: STRAND: *Investigations of the context and feasibility study of potential approaches -* *Exceptional investigations identify a breadth of highly challenging problems and opportunities for further consideration. Objective and innovative consideration of market potential through the approaches taken.*	Theoretical content: Technical Principles: Methods of fixing, and joining methods, the use of surface finishes, smart, technical and composite materials, enhancement of materials, modern and industrial commercial practice, digital design and manufacture, the requirements for product design and manufacture, enterprise and marketing in the enterprise of products and design communication. NEA Content: STRAND: *Investigations of the context and feasibility study of potential approaches -* *Exceptional investigations identify a breadth of highly challenging problems and opportunities for further consideration. Objective and innovative consideration of market potential through the approaches taken.*	Theoretical Content: Design and Making principles: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes, NEA Content: STRAND: Investigations of existing products and design practices Sophisticated, comprehensive and fully relevant information and sources of inspiration are identified to perceptively and skillfully influence design iterations and thinking when required throughout the design process.	Theoretical content: Design and Making principles: Accuracy in design and manufacture, Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: STRAND: *Investigations of user and stakeholder needs and wants and the outlining of stakeholder requirements (nontechnical specification)* *Exceptional consideration of primary user and other stakeholders needs and wants. A range of clearly defined and comprehensive requirements are identified that offer scope to support the design process.* *Exceptional critical evaluations with focused reflection on requirements and feedback. Ongoing, perceptive and comprehensive reviews to identify problems and next-steps for future iterations and convincingly supports progression.* *Exceptional, with fully appropriate methods used to analyse and test*	Theoretical content: Technical Principles revisited in relation to NEA and Exam prep: Materials and their applications – Classification of materials, investigating and testing materials and the performance characteristics of materials. Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes. NEA Content STRAND *Different, relevant and innovative design approaches that lead to non-fixated ideas, offering outstanding scope for challenge and fully reflect and meet requirements* *Design iterations are highly professional, systematic and chronological, fully supported by exceptional real-time evidence.* *Informal graphical and modeling skills are exceptional and are highly effective and convincing in*	Theoretical content: Technical Principles revisited in relation to NEA and Exam prep: Design and Making Principles revisited in relation to NEA and Exam prep: Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: STRAND: *Different, relevant and innovative design approaches that lead to non-fixated ideas, offering outstanding scope for challenge and fully reflect and meet requirements* *Design iterations are highly professional, systematic and chronological, fully supported by exceptional real-time evidence.* *Informal graphical and modeling skills are exceptional and are highly effective and convincing in appropriately communicating initial thinking.* *Exceptional critical evaluations with focused reflection on requirements*

				whether the design solution is fit for purpose.	*appropriately communicating initial thinking.*	*and feedback. Ongoing, perceptive and comprehensive reviews to identify problems and next-steps for future iterations and convincingly supports progression.*
	Skill development: Demonstrate advanced knowledge of materials and a wide range of applications, the classifications of fibres, workshop and industrial tests and advanced knowledge of fibres and their characteristics. Mathematics/Science Links: ● Material use based on physical and working characteristics ● Calculation of quantities of materials sizes and costs. ● Analysis of data obtained from testing ● Assessing physical shape and formation of materials against performance.	Skill development Develop and demonstrate advance knowledge of permanent fixing and semi permanent joining methods, enhancement and industrial/commercial practice Develop advanced understanding of surfaces treatment finishes, specific manufacturing methods and justify the use of digital manufacture. Mathematics/Science Links: ● Modification of materials due to finishes/physical characteristics ● Use of datum points and geometry when setting out design drawings. ● The use of tolerances in dimensioning.	Skill development Critical analysis of existing products. Develop in-depth knowledge of the design, development and manufacture of product design products to meet specification criteria Develop in-depth, advanced knowledge of how major developments in technology, history, designers , movements, socioeconomic influences have helped to shape product design and manufacture. Mathematics /Science Links: ● An awareness of scientific advancements/ discoveries and their potential development.	Skill development Demonstrate understanding of the responsibilities of designers and manufacturers. Apply personal judgement and relevant criteria in the appraisal of products and systems. Development of a prototype from design proposals. Mathematics /Science Links: ● The use of mathematics in developing pattern templates ● Determining quantities of materials. Calculation of sides and angles of products. Use of datum points and geometry when setting out design drawings. Use of geometry to create templates for designs. ● Calculations based on economies of scale. The impact of one way designs, and orthographic/working drawings	Skill development Develop the capacity to think creatively, innovatively and critically through focused research and the exploration of design opportunities arising from the needs, wants and values of users and clients Comprehensive range of strategies and techniques to thoroughly explore design opportunities. Mathematics /Science Links: ● Representation of data used to inform design decisions and evaluation of outcomes. ● The use of ergonomic and anthropometric data when designing products for humans and specific applications.	Skill development Take design risks, showing innovation and enterprise whilst considering their role as responsible designers and citizens. Develop intellectual curiosity about the design and manufacture of products and systems, and their impact on daily life and the wider world Work collaboratively to develop and refine their ideas, responding to feedback from users, peers and expert practitioners. Construct a comprehensive brief and specification but are able to rationalise design decisions Mathematics/Science Links: ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of fashion products
	Assessment: SUMMER TASK CONTEXTUAL CHALLENGE Exam component Principles in product Design 1.5hrs NEA Component Strand 1	Assessment: Exam component Problem solving in product Design 1.45hrs NEA Component Strand 1&2	Assessment: Exam component Principles in product Design 1.5hrs NEA Component Strand 1-5	Assessment: Exam component Problem solving in product Design 1.45hrs NEA Component Strand 1-3	Assessment: Exam component Principles in product Design 1.5hrs NEA Component Strand 1	Assessment: Exam component Problem solving in product Design 1.45hrs NEA Component Strand 1-5
13 Prod Des 2023 onwards	Theoretical Content Technical Principles: Materials and their applications – Classification of materials, investigating and testing materials and the performance characteristics of materials (timbers, metals, alloys and polymers all constructions construction, smart, technical and commercial) Design and Making Principles revisited in	Theoretical Content: Technical Principles revisited in relation to NEA and Exam prep: Methods of joining and using components, the use of surface finishes, enhancement of materials, modern and industrial commercial practice, digital design and manufacture, the requirements for product design and manufacture, enterprise and marketing in the enterprise of products and design communication.	Theoretical Content: Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes Accuracy in design and manufacture, Responsible design, Design for manufacture and project management,	Theoretical Content: Technical Principles revisited in relation to NEA and Exam prep: modern and industrial commercial practice, digital design and manufacture, the requirements for product design and manufacture, enterprise and marketing in the enterprise of products and design communication. Design and Making Principles revisited in relation to NEA and Exam prep:	Theoretical Content: Principles in product design – Focused revision for each pupil. Problem Solving in product design Principles – Focused revision for each pupil in preparation for the June exams.	Theoretical Content: Principles in product design – Focused revision for each pupil. Problem Solving in product design Principles – Focused revision for each pupil in preparation for the June exams.

	relation to NEA and Exam prep: Responsible design, Design for manufacture and project management, National and international standards in product design NEA Content: STRAND 1, 2 and 5 Exceptional investigations identify a breadth of highly challenging problems and opportunities for further consideration. Objective and innovative consideration of market potential through the approaches taken.	Design and Making Principles revisited in relation to NEA and Exam prep: Design methods and processes, design theory, how technology and cultural changes can impact on the work of designers, Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes, NEA Content: STRAND 2 -5 Different, relevant and innovative design approaches that lead to non-fixated ideas, offering outstanding scope for challenge and fully reflect and meet requirements. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	National and international standards in product design. NEA Content: STRAND 3 -5 Design iterations are highly professional, systematic and chronological, fully supported by exceptional real-time evidence. Exceptional and fully relevant, covering all requirements and safety considerations identified from the technical specification to convincingly manage the making process. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	Design processes, Critical analysis and evaluation, Selecting appropriate tools, equipment and processes Accuracy in design and manufacture, Responsible design, Design for manufacture and project management, National and international standards in product design. NEA Content: STRAND 4/ STRAND 5 Exceptional and fully relevant, covering all requirements and safety considerations identified from the technical specification to convincingly manage the making process. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.		
	Skill development Secure advanced, in-depth knowledge on classification/properties of material properties. Demonstrate the ability to produce a comprehensive, detailed and well explained design specification which will fully guide the student's design thinking, supported by detailed project management, developed design proposals, exploration and experimentation with different materials, techniques and processes leading to an excellent quality design of a prototype for manufacture. Mathematics /Science Links: ● Understand how the physical structure of	Skill development Secure advanced, in-depth knowledge on the effects of finishes in relation to material properties. Construct a comprehensive and fully detailed manufacturing specification Manufacturing allows for further development of design proposals in response to ongoing evaluation, testing and full consideration of contingency planning as prototype development takes place. Mathematics /Science Links: ● Understand how the physical characteristics of materials can be modified by using surface finishes ● Calculation of quantities of materials, costs and sizes	Skill development Create and analyse a design concept and using a range of skills and secure, advanced, in-depth knowledge to inform decisions Produce a high-quality prototypes/products Critical understanding of the wider influences on design and technology/fashion industry. Complexity or challenge is involved throughout the production of prototype(s). Excellent manufacturing skills combined with an excellent understanding of the need for dimensional accuracy and precision to produce their final prototype(s). Mathematics /Science Links: ● Determining quantities of materials ● Calculation of sides and angles as part of product design	Skill development Design and make a prototype(s) which fully address the design brief, satisfying all major points of the specification and take into account all amendments/ modifications to their original design proposals as necessary. Evidence throughout the manufacturing process that appropriate health and safety processes have been both considered and employed. Comprehensive evidence of analysis and evaluation throughout the process. Mathematics /Science Links: ● Use of ratios –size grading ● Representation of data used to inform design decisions and evaluation of outcomes. ● Presentation of market data, user preferences, outcomes of market research	Skill development Testing at an advanced level in order to carry out focused and comprehensive tests with clear evidence of how the results have been used to inform the design and any modifications to the prototype. Secure the ability to produce a reasoned critical analysis of their final outcome. Comprehensively and critically evaluate their final prototype, fully justifying modifications and full consideration provided for how the prototype could be developed for different production methods ● Mathematics /Science Links: Representation of data used to inform design decisions and evaluation of outcomes. ● Understand the appropriate use of materials, including timbers, metals/alloys, polymers, technical materials, ceramics, and	Skill development Secure all knowledge of both the technical and design and making principles at an in-depth, advanced level in order to prepare them for both the Problem solving Exam and the Product design Principles Exam component. Mathematics /Science Links: ● Determining quantities of materials ● Calculation of sides and angles as part of product design ● Use of datum points and geometry when setting out patterns ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of products

	material affects performance. ● Environmental factors can cause potential degradation. ● Interpret statistical analyses to determine user needs and preferences. ● Use data related to human scale and proportion to determine required sizes and dimensions of products				metals, based on their physical properties	
	Assessment: Exam component Principles in product Design 1.5hrs STRAND 1, 2 and 5 Exceptional investigations identify a breadth of highly challenging problems and opportunities for further consideration. Objective and innovative consideration of market potential through the approaches taken. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	Assessment: Problem solving in product Design 1.45hrs STRAND 2 -5 Different, relevant and innovative design approaches that lead to non-fixated ideas, offering outstanding scope for challenge and fully reflect and meet requirements. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	Assessment: Exam component Principles in product Design 1.5hrs STRAND 3 -5 Design iterations are highly professional, systematic and chronological, fully supported by exceptional real-time evidence. Exceptional and fully relevant, covering all requirements and safety considerations identified from the technical specification to convincingly manage the making process. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	Assessment: Problem solving in product Design 1.45hrs STRAND 4/ STRAND 5 Exceptional and fully relevant, covering all requirements and safety considerations identified from the technical specification to convincingly manage the making process. - Exceptional analysis and evaluation of investigated sources of information from stakeholders, existing products and wider issues, offering clear and convincing support to inform the design process.	Assessment: EXTERNAL EXAM COMPONENT PREPARATION Principles in product Design 1.5hrs Problem solving in product Design 1.45hrs	Assessment: EXTERNAL EXAM COMPONENT PREPARATION Principles in product Design 1.5hrs Problem solving in product Design 1.45hrs