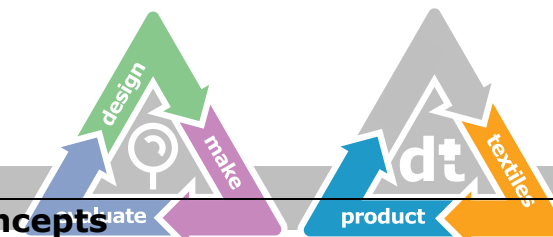
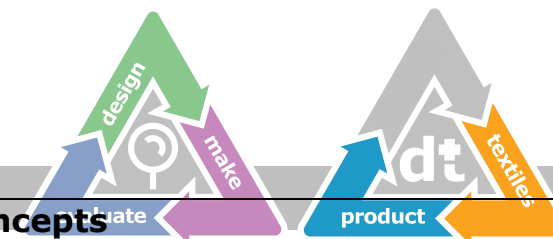


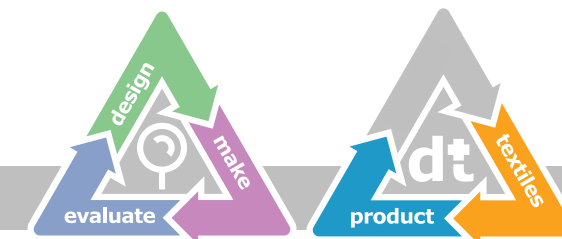
Vision: To become a beacon of excellence with The Radclyffe School To develop student intellectual curiosity and encourage a lifelong interest in problem-solving, experimentation and the way everyday products are designed and manufactured To equip our students with transferable skills including independence, resilience and organisation to prepare them for their future careers To empower our students with the expertise, knowledge and cultural capital for a rapidly changing and technological world. One which they can contribute confidently and positively to, no matter their starting point							
	HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Literacy – 3 priority tier 3 words per lesson and an additional tier 2 word where appropriate to be explicitly taught. 10 spellings over the 13-week rotation. 1 piece of extended writing focussing on social, economic, ethical, cultural or environmental challenge.  Year 7	Purpose of sequence: <i>To provide students with an insight into the power of D+T and in doing so, the knowledge and skills which will form the building blocks for future learning</i> <i>To develop student intellectual curiosity so they are able to design and make creative, yet functional everyday products</i> <i>To introduce students to good, award winning design and provide them with screen alternatives</i> <i>To investigate the versatility and sustainability of timbers and textiles</i> <i>To introduce a range of basic timber and textile workshop tools and equipment</i> <i>To promote student independence, resilience and organisation</i>			FPN		Knowledge, understanding and skills	
	Scenario 1 – Screen addiction <i>Many young people have far too much screen time and have become obsessed with their devices.</i> Targets: - To outline the importance of good design - To appreciate the importance of problem solving when design designing new products - To understand the importance of product analysis in the design process - To reformulate a basic design specification based on new information - To develop knowledge of timbers and their suitability for everyday products - To consider the environmental impact of design on the modern world - To reintroduce students to sustainability and carry out a Life Cycle Assessment - To explore and evaluate the work of Heatherwick Studio - To introduce proven design strategies - To develop 2D/3D sketching and isometric drawing technique - To introduce students to timber hand tools and develop practical skills - To embed mathematics with a focus on measuring and marking out - To appreciate the importance of quality control and how this can be achieved To provide the building blocks for future learning		Investigate - Understand the term design scenario - Consider the need and wants of people from different backgrounds - Learn about and analyse the work of others e.g. Heatherwick Studio - Know different ways in which design impacts the environment - Appreciate why and how we use the design strategy: product analysis - Know how to write a basic design brief and specification - Learn about common timber and textile materials and their properties				
		Scenario 2 – Dementia <i>People with Dementia lose their long-term memory and often forget people which can be particularly difficult and upsetting for their loved ones.</i> Targets: - To reflect and consider other cultures, interest and hobbies - To study the needs and wants of people with specific needs - To use research to inform future design decisions - To identify suitable textile materials and components for manufacture - To explore and evaluate the work of others - To experiment with hand stitching and decorative techniques - To investigate a range of linkage mechanisms - To design and manufacture a simple, yet functional product, designing to solve a real-life scenario - To receive health and safety training when using a variety of standard workshop tools To provide the building blocks for future learning				Design - Experiment with basic 2D and 3D drawing techniques - Present ideas using basic isometric projection - Produce creative design ideas - Communicate design ideas using basic written notes - Use introductory presentation techniques - Apply basic mathematics. e.g. measuring to improve design understanding	
						Make - Use basic hand tools to manufacture quality products - Learn basic material joining techniques - Use templates to improve accuracy - Show resilience and learn from mistakes - Develop confidence in the workshops	
						Evaluate - Test and refine products against a specification and considering the views of others - A final product in order to identify possible improvements - The work of others including the Heatherwick Studio - A product based on its environmental impact	



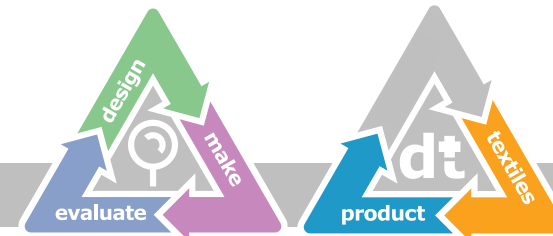
		HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Year 8	Literacy – 3 priority tier 3 words per lesson and an additional tier 2 word where appropriate to be explicitly taught. 10 spellings over the 13-week rotation. 1 piece of extended writing focussing on social, economic, ethical, cultural or environmental challenge.	Purpose of sequence: - To develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world - To ensure that students are informed about the environmental impact of design and technology on the modern world - To introduce computer aided design through virtual modelling - To promote and encourage problem solving and risk taking to avoid design fixation - To provide students with an insight into a real-life and relevant design problem which they can respond creatively to - To promote student independence, resilience and organisation				FPN		Knowledge, understanding and skills
		Scenario 3 – Throw away culture Many young people have far too much screen time and have become obsessed with their devices. Targets: - To investigate the throw-away culture - To research and write a design brief - To learn about user requirements - To recall the value of product analysis - To learn about ergonomics and anthropometrics - To further investigate sustainability in design - To learn about forces and stresses and consider their impact on everyday products - To learn about mechanical systems - To learn how structures are categorised - To experiment with modelling techniques - To consider the environmental benefits of flat-packed furniture - To begin a final design in isometric projection - To annotate and justify your final design decisions - To introduce TinkerCAD virtual modelling - To know how to convert 3D shapes into 2D - To carry out appropriate evaluations To provide the building blocks for future learning	Scenario 4 – Road safety Keeping people out and about in the day and night safe by allowing them to be seen by traffic and other road users. Targets: - To embed the iterative design process - To use research to inform future design decisions - To identify suitable smart & modern materials for manufacture - To explore and evaluate the work of others - To understand how to use the sewing machines and other equipment safely - To appreciate the importance of quality control and how this can be achieved - To introduce proven design strategies - To design and manufacture a functional product, design to solve a real-life scenario - To promote resilience, independence and project ownership - To receive health and safety training when using a variety of standard workshop tools To provide building blocks for the future learning	Investigate - Carry out a task analysis - Understand and identify different user needs and wants within a given scenario - Formulate a design brief using initial research - Collect and analyse basic anthropometric data and use to inform design decisions - Research the work of furniture designers - Appreciate different ways in which design impacts the environment - Know and define the five forces that structures have to withstand - Know about some different modern and smart materials and how they can be used in design - Understand the term mechanism - Know where KDF are used and why Design - Experiment with design strategies to produce creative solutions - Use structures to inspire creativity - Render and present designs accurately - Use mathematical principles to enhance design accuracy - Understand the term product component - Separate a 3D shape into component parts Make - Develop physical modelling skills - Develop collaborative learning - Know how to build a simple flat-pack chair - Overcome barriers through problem solving and demonstrate initiative - Use more advanced mathematics to model accurately using CAD software - Measure accurately to mark out accurate templates Evaluate - The use of Modern/Smart materials in product design - A final design proof of concept against a design brief and design specification - The impact of design on individuals, society and the environment				



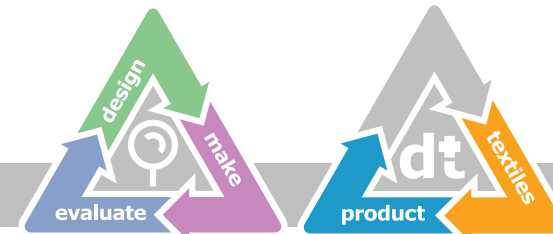
		HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts		
Year 9		Purpose of sequence: - To develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world - To provide students with an opportunity to experience the demands of an NEA style project prior to them making their option choices - To further embed the iterative approach to design using different design strategies - To enhance knowledge of materials suitability and construction methods - To develop literacy technique and embed Mathematics - To consider the moral implications of CAD/CAM for people and families - To further promote problem solving and risk taking to avoid design fixation - To continue to design within a real life and relevant scenario - To promote student independence, resilience and organisation				FPN				Knowledge, understanding and skills
	Literacy – 3 priority tier 3 words per lesson and an additional tier 2 word where appropriate to be explicitly taught. 10 spellings over the 13-week rotation. 1 piece of extended writing focussing on social, economic, ethical, cultural or environmental challenge. Scenario 5 – Sleep deprivation Some young children and teenagers struggle to focus at school because they don't get enough sleep. Targets: - To investigate design opportunities - To recall different research tools - To further investigate materials and their suitability for manufacture - To identify a design problem and develop a justified design specification - To appreciate the benefits of collaborative design - To further improve idea presentation technique - To embed mathematics with a focus on 3D shape volume calculations - To assess the benefits and drawbacks of different 3D model making techniques - To demonstrate confidence and accuracy when using CAD software - To how electronic systems provide functionality to products and processes - To learn how to solder safely and accurately - To appreciate the importance of quality control when designing and making products - To learn a range of finishing techniques - To understand and demonstrate the importance of product testing and evaluation - To promote resilience To provide the building blocks for future learning	Scenario 6 – Ethical and sustainable fashion Some clothing brands continue to manufacture garments unethically and with little regard for their broader environmental impact. Targets: - To further embed the iterative process - To investigate sustainability and ethical issues within fashion - To understand and be able to select appropriate sustainable materials - To research and experiment with different fabric colouration methods - To investigate textiles specific CAD & CAM within design & manufacture - To further embed mathematics with a focus on anthropometrics and lay plans. - To appreciate the importance of quality control when designing and making using a sewing machine. - To receive further health and safety training when using a textiles tools and tools and machines - To learn a range of different seams - To promote resilience - To promote independence and self-planning - To understand the importance of product testing and evaluation To provide the building blocks for future learning	Investigate - Link prior and new knowledge to complete a comprehensive iterative project - Select, complete and appreciate the relevance of investigations to inform ongoing design - Identify, solve and respond creatively to a problem - Use research to inform design decisions and to generate a user focussed, concise design brief - Develop specifications to inform the design of innovative, functional and appealing products that respond to needs in a variety of situations - Understand and use the design strategy: collaborative design Design - Develop and communicate design ideas using justified annotated sketches - Render designs accurately, accounting for shadows and highlights - Produce final designs using 2D/3D drawing techniques - Produce accurate CAD and CARD models - Select appropriate computer-based tools to enhance work presentation - Incorporate mathematical modelling into design work - Select appropriate materials for design based on their specific properties Make - Use flow charts to plan and maintain product quality - Use machine tools including CAM and electronics equipment to manufacture quality products - Call upon a repertoire of knowledge, understanding and skills in order to manufacture a high-quality product Evaluate - Analyse the work of others including the Art Deco design style and fashion designers - Modern manufacturing including CAD/CAM and robotics - Acknowledge the responsibilities of designers, engineers and technologists - Test, evaluate and refine products against a specification and considering the views of others							



		HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Year 10	Purpose of sequence: - To ensure students are fully prepared for the demands of the non-exam assessment - To build a student knowledge and skills toolkit which can be called upon when completing their NEA - To prepare students for the Year 11 Summer examination by studying 3 of the 6 required units - To promote student independence, resilience and organisation						The first year of the qualification will be split evenly between theory and NEA content. 3 hours per fortnight for each.	Non-examined assessment 50% of the qualification 100 marks Content overview There are four parts to the assessment: 1 – Investigate This includes investigation of needs and research, and a product specification 2 – Design This includes producing different design ideas, review of initial ideas, development of design ideas into a chosen design, communication of design ideas and review of the chosen design 3 – Make This includes manufacture, and quality and accuracy 4 – Evaluate This includes testing and evaluation. Students should have the knowledge and skills to confidently and independently undertake the NEA by the end of half term 5. Once the actual NEA is released teacher feedback has to be much more general, as per JCQ guidance. <u>Assessment.</u> Students will be assessed against the Edexcel marking criteria at key stages using targeted written and verbal teacher feedback. They will be expected to use MAD time and option home learning to improve the quality of their work. Examination preparation. By the end of Year 10, students should have been taught 3 out of 6 examination units (5 of which cover the core content and 1 the specialist material area). Individual staff may choose to teach the units in a sequence which better suits their individual classes. For example, unit 6 and 4 may be delivered alongside the design and make sections of the practise NEA. <u>Assessment.</u> Students are to complete home learning booklets for each unit and they will be assessed formally with an end-of-unit test once all content has been delivered. A Year 10 PPE is also assessed.
	Practise NEA Targets: Investigate - To understand and analyse the contextual challenge for NEA - To recall how to create a client profile - To recall how to write an effective questionnaire - To create an inspirational mood board - To learn about anthropometric data and its role in designing successful products - To recall understanding of ergonomic design and make links to specific anthropometric data - To use MAD time to proactively improve the quality of your practise NEA. - To analyse the situation/context in which your prototype will be used - To complete your analysis of existing products - To write a concise and evidence-based design brief and design specification Design Design communication SoW - To recall the different drawing techniques used to present design ideas - To learn different rendering techniques to add design idea realism *This sequence is a representation of all of the knowledge and skills covered in Year 10 however the iterative process will demand ongoing investigation and evaluation.	Practise NEA Targets: - To develop 3d modelling skills using card - To develop 3d modelling skills using foam - To develop modelling skills using AutoDesk Fusion 360 tutorials - To generate a range of innovative design iterations for the practise NEA task - To identify and present appropriate techniques for each iteration - To confidently model the practise NEA designs using different 3D modelling techniques Make Skills box or Skills bag - To research different manufacturing methods and carry out practical investigations and material construction methods - To produce a traditional or CAD final working dimension with accurate measurements - To accurately manufacture prototype using appropriate materials and manufacturing techniques - To demonstrate a clear appreciation for quality control and demonstrate this using a production diary Evaluate - To carry out an informed evaluation - To evaluate the sustainability of the final product by carrying out an LCA	The actual NEA task is released on June 1st of Year 10. Students will be expected have a clear grasp of the NEA requirements having completed a practise ‘walk and talk’ project in Year 10, terms 1 and 2. Before students leave for the Summer break, they should have completed their investigation and have made significant progress with their initial design ideas and analysis. The specification criteria are listed below: NEA – 1. Investigate 1.1a Investigation of needs and research 1.2 Product specification NEA – 2. Design 2.1 Design ideas 2.2 Review of initial ideas *See specification for assessment criteria					
	Examination preparation Unit-61-Timbers See medium term SoL for a breakdown of how this is delivered.	Examination preparation Unit-5-Designing-principles See medium term SoL for a breakdown of how this is delivered.	Examination preparation Unit-4-Material-types-properties-and-structure See medium term SoL for a breakdown of how this is delivered.					
	Literacy – explicitly explain all new terminology (tier 3 words) half termly students to make a glossary of terms in the back of their books. Extensive note taking and writing stamina build up. 							

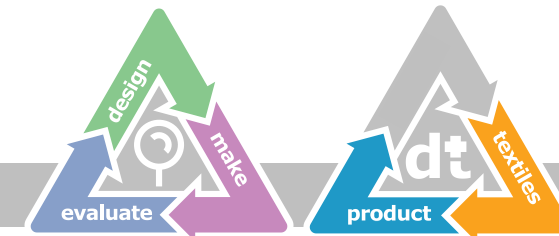


	HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Year 11	Purpose of sequence: - To ensure that students complete all requirements of the NEA on deadline (February half term) - To complete student preparation for the Year 11 Summer examination by studying the remaining 3 units - To identify subject knowledge gaps and implement appropriate interventions before the exam - To promote student independence, resilience and organisation					The second year of the qualification will be split 2:4 between theory and NEA content. 4 hours dedicated to the NEA until February half term.	Non-examined assessment 50% of the qualification 100 marks Content overview There are four parts to the assessment: 1 – Investigate This includes investigation of needs and research, and a product specification 2 – Design This includes producing different design ideas, review of initial ideas, development of design ideas into a chosen design, communication of design ideas and review of the chosen design 3 – Make This includes manufacture, and quality and accuracy 4 – Evaluate This includes testing and evaluation. Students should now demonstrate accuracy, initiative and independence to complete their NEA project by February half term. Having completed a practise project in Year 10 they are now required to complete their personalised design investigation culminating in a high-quality prototype. <u>Assessment.</u> Students will be assessed against the Edexcel marking criteria at key stages using whole class feedback and formative assessment strategies. They will be expected to use MAD time and to improve the quality of their work. During half termly assessment checks, the teacher may choose to target general misconceptions at class level. Examination preparation. By the end of Year 11, students should have been taught 6 examination units (5 of which cover the core content and 1 the specialist material area). Students should be fully prepared to undertake the examination which is worth 50% of the overall GCSE. <u>Assessment.</u> Students are to complete home learning booklets for each unit and they will be assessed formatively with an end-of-unit test once all content has been delivered. A Year 11 PPE is also assessed.
	NEA Targets: NEA – 2. Design 2.3 Development of design ideas into a chosen design 2.4 Communication of design ideas NEA – 3. Make 3.1 Manufacture 3.2 Quality and accuracy NEA – 4. Evaluate 4.1 Testing and evaluation *This sequence is a representation of all of the knowledge and skills covered in Year 10 however the iterative process will demand ongoing investigation and evaluation.			February Half Term	Half term 4 is used to target subject knowledge gaps and provide effective intervention, based on prior examination performance.	Exams	
Literacy – explicitly explain all new terminology (tier 3 words) half termly students to make a glossary of terms in the back of their books. Extensive note taking and writing stamina build up. 	Examination preparation Unit-1-New-and-emerging-technologies See medium term SoL for a breakdown of how this is delivered.		Examination preparation Unit-3-Energy-materials-devices-and-systems See medium term SoL for a breakdown of how this is delivered.		Examination preparation Unit-2-Informing-design-decisions See medium term SoL for a breakdown of how this is delivered.		



Curriculum Intent (This plan tracks both Product Design and Textiles)

Year 7 (26) weeks	Year 8 (26) weeks	Year 9 (26) weeks	Year 10	Year 11
By the end of Year 7 students should have the basic knowledge, understanding and skills needed to engage in an iterative process of designing and making. They will have experienced two Product Design and Textile Design rotations and explored two different contexts. When designing and making, students will have been taught to: A1—Solve real and relevant problems, own and other’s needs, within a variety of contexts A4—Demonstrate creativity and explore culture, wealth and well-being B1—Develop creative technical and practical expertise B2—Build and apply knowledge, understanding and skills when making prototypes B3—Evaluate products and others work. E1—Research and explore E3—Understand basic user needs F2—Use different approaches to generate creative and original ideas F3—Communicate ideas using sketches and notes G1—Use basic tools and equipment G5—Experiment with different materials H1—Research the work of others H6—Understand the impact of D+T on society and the environment	By the end of Year 8 students should have developed knowledge, understanding and skills needed to engage in an iterative process of designing and making. They will have experienced two Product Design and Textile Design rotations and explored two further contexts. When designing and making, students will have been taught to: A1—Solve real and relevant problems, own and other’s needs, within a variety of contexts B1—Develop creative practical expertise B2—Build and apply knowledge, understanding and skills when making prototypes B3—Evaluate ideas, products and others work. E1—Research and explore E3—Understand user needs E4—Reformulate problems E5—Develop specifications to inform ideas F2—Use different approaches to generate ideas F3—Communicate ideas using sketches and notes F5—Communicate ideas using 3D and mathematical models G1—Select and use more advanced tools G5—Experiment with different materials and components, considering their working properties H1—Analyse the work of others H4—Consider the views of intended users H6—Understand the impact of D+T on society and the environment H7—Understand responsibilities of designers, engineers and technologists J3—Understand how mechanical systems enable changes in movement and force	By the end of Year 9 students should have good knowledge, understanding and skills needed to engage in an iterative process of designing and making. They will have experienced two Product Design and Textile Design rotations and explored two further contexts. When designing and making, students will have been taught to: A1—Solve real and relevant problems, own and other’s needs, within a variety of contexts B2—Build and apply knowledge, understanding and skills when making prototypes B3—Evaluate ideas, products and others work. E1—Research and explore E3—Understand user needs E5—Develop specifications to inform ideas F2—Use different approaches to generate ideas F3 + F5—Communicate ideas using sketches and notes and 3D and mathematical models F6—Communicate using computer-based tools G2—Select and use specialist processes G4—Select and use CAM G5—Experiment with different materials and components, considering their working properties H1—Analyse the work of others H3—Test, evaluate and refine ideas H4—Consider the views of intended users H6—Understand the impact of D+T on society H7—Understand responsibilities of designers J2—Understand and use structural elements of materials to achieve functional solutions J4—Experiment with electrical and electronic systems used in products	NEA—By the end of Year 10 students should have the knowledge, understanding and skills to confidently undertake the actual NEA task and begin their own unique, journey of discovery. They should be fully versed in the assessment criteria, including the JCQ rules, following a walk and talk, teacher led practise project and be ready to work with independence and accuracy to investigate, design, manufacture and evaluate a user-focussed, design solution following the iterative process. In order to complete the NEA successfully, students should be proficient in the various NEA tools, enabling them to select tasks for their appropriateness, maximising time available and maintaining project deadlines. To do this, students will have developed resilience to overcome problems, and be comfortable taking design-risks and experimenting to achieve original ideas. Regarding the practical element, students should have acquired some knowledge of tools, equipment and processes and be able to work safely and accurately, exploring materials and manufacturing techniques. Examination knowledge—By the end of Year 10 students should have developed Core and Specialist knowledge through the revision of units 4-6 of the GCSE examination specification dovetailed with the practise NEA. Students should have confidence when answering questions about the impact of new and emerging technologies, informing design decisions and energy, materials, devices and systems. Students should also know how to answer a range of mathematics and scientific questions, specific to D+T.	NEA—By the end of Year 11 students should have completed their NEA. Using the knowledge, understanding and skills secured in Years 7-10, students are expected to have manufactured an independently achieved, original prototype using the iterative process, and by utilising relevant NEA tools to fully investigate, design, manufacture and evaluate a final solution. Students should now have developed some resilience and be more proficient in time-management. They should have overcome design problems through determination, experimentation and ingenuity. Regarding the practical element, students should have built upon their knowledge and understanding of tools, equipment and processes to skilfully represent a high-quality outcome, which has the potential to manufactured commercially. Examination knowledge—By the end of Year 11 students should have secured Core and Specialist knowledge through the revision and retrieval of key information from of units 1-6. Students to be aware of, and have learned from, wider influences on design and technology, including historical, social/cultural, environmental and economic factors. In addition to units 1-3, students should now be confident when answering questions about materials, properties and structure, designing principles and their specialist material area. In preparation for their final examination, students should be organised and confident revising using personalised strategies. They should have developed exam technique via PPE completion and be confident answering long-answer questions, identifying command words. In addition, students should know how to answer a range of mathematics and scientific questions, specific to D+T.



Agreed GCSE D+T sequence 2023/24 **(Timbers and Textiles)**

Year 10

	3 lessons	2 lessons
HT1	Practise 'Walk and talk' NEA investigation	Unit 6 – specialist material knowledge and skills
HT2	Skills box/bag PD/TX	
HT3		
HT4	Design communication/Unit 5 Design strategies	
HT5	Development - Paper/CARD/CAD modelling	
HT6	Actual NEA Investigation + begin design	Unit 4 - materials

Year 11

	4 lessons	1 lesson
HT1	NEA to completion (February HT) Connect activities to target Units 1-3	Unit 2 – informing design decisions
HT2		
HT3		
5 lessons		
HT4	Unit 1 – new and emerging technologies	
HT5	Unit 3 – energy, materials, devices and systems	
HT6	Further retrieval practice, misconceptions and study leave	