KS3 Curriculum Overview (Design & Technology)

16-week rotation for year 7 + 3 stand-alone lessons for rollover

Year 7 – Magic Moisture Sensor

TERM 1	TOPIC:	*Key Skills/Subject Links	*Career links & BV
Week 1	Baseline test for Milestone 1 data Introduction to the workshop Health and Safety – use of machinery	**Key skills/Subject links – Materials & Processes Design:** Research, investigating and exploration of materials, properties, characteristics in connection with the user need. Identifying and solving the design brief given problems, communicating how to redevelop the product to be/perform better. **Curriculum links** GCSE - NEA section A01 Engineering Component 1A	**Career links** Civil, chemical, environmental or mechanical engineer. Furniture designer. Industrial/product designer. Materials engineer. Product manager. Product/process development scientist To promote greater awareness for students about the world of work, the development of key skills and employability. Students work together to support each other in lessons and children that are more able can be given the opportunity to lead with their own examples of their work
Week 2	Health & Safety – practical – use of the fretsaw – Introduction to Project – identify design problem		
Week 3	Research / Investigation Investigate house plants to build background knowledge, understand user needs.		
Week 4	Generate creative ideas - Develop and communicate design ideas using annotated sketches and presentation skills		
Week 5	Development of final idea – detailed drawing with annotation		
Week 6	Establish Specification		
Week 7	Model final solution		
TERM 2	**TOPIC:**	**Technical knowledge:** Understand developments in design and technology using equipment to support understanding. Understand how more advanced electrical and electronic systems can be powered and used in their products for example, circuits with moisture as inputs and LED's as outputs **Curriculum links** GCSE - NEA section A02 and the exam – applying the technical knowledge. Engineering Component 1 A, B, 2 B, C **Subject Links:** Maths -measurements, scale, tessellation. English – creating step by step guides on a process, communication skills. Art – sketching techniques. PE – strength, students are physical and arm strength can be demanding with in the manufacture stage	Students are taught that DT is a very subjective and personal subject which provides an opportunity to express themselves. Students are encouraged to make decisions with their own design choices, style and sometimes media choice. Students are expected to take responsibility for all of the equipment used when working in DT. To relate skills attitudes, concepts and knowledge learned in school to applications in the wider world. To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Introduce Electronics How to produce PCB's Recognition of electronic components How a transistor, resistor works		
Week 2	Soldering demonstration – Soldering Practice – health & safety		
Week 3	Project Manufacture – electronic circuit		
Week 4	Project Manufacture – electronic circuit		
Week 5	Testing and Evaluation		
Week 6	Students to start manufacturing casing Demonstration of machinery, tools Scroll saw, Coping saw, assorted files		

TERM 3	**TOPIC:**	**Make:** Select from and demonstrate skill with specialist tools, techniques, processes, equipment and machinery precisely for each of the categories of materials. Select from and develop skills in a wider, more complex range of materials, taking into account their properties. **Curriculum links GCSE** – NEA section A02 Engineering Component 1B, 2C **Evaluate:** Develop and communicate design ideas including mathematical modelling. Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups	**BV** Students follow general class and school rules during their DT lessons. Students understand the importance of safety rules when using tools. Students are taught the specific skills within the subject allowing them to develop their skills in following the 'rules' of Design & Technology Students also understand and accept that if these rules are not followed that there are consequences to this.
Week 1	Students continuing with practical work Demonstration of machinery, tools Silicon Carbide paper, Buffing Wheel		
Week 2	Students continuing with practical work Demonstration of machinery, tools Line Bender		
Week 3	Students continuing with practical work Demonstration of machinery, tools Pillar Drill		
Week 4	Students continuing with practical work Demonstration of machinery, tools		
Week 5	Completion of Moisture Sensor		
Week 6	Evaluation of Moisture sensor and student progress		
TERM 4	**TOPIC:**		
Week 1			
Week 2			
Week 3			
Week 4			
Week 5			
Week 6			
TERM 5	**TOPIC:**		
Week 1			
Week 2			
Week 3			
Week 4			
Week 5			
TERM 6	**Topic:**		
Week 1			
Week 2			
Week 3			
Week 4			
Rollover			
Week 5	Drawing skills – shading and textures	Art –Drawing skills Maths – Angles, measuring, shape **Subject Link** Drawing presentation, NEA	
Week 6	Drawing skills - isometric		
Week 7	Drawing skills – one-point perspective		

YEAR 8 – SMART/CADCAM Night Light Project

TERM 1	TOPIC: Night light project	*Key Skills/Subject Links	*Career links & BV
Week 1	Baseline assessment – Milestone 1 or 2 data Brief and research	**Maths – 2D and 3D shape measuring** **Literacy - research skills, referencing,** **IT skills – design programs** **Subject link - links to GCSE, CAD/CAM, skills based, supporting the NEA, design movements exam topics**	• To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 2	Specification		
Week 3	Design movements – looking at different design movements to influence design		
Week 4	Design ideas – theme culture/design movements		
Week 5	Design Development, to enhance and develop ideas to create something new and original		
Week 6	CAD - 2D design, designing the product		
Week 7	CAD - 2D design, designing the product		
TERM 2	**TOPIC: Night light project**	**Literacy – research skills** **Maths – money, measuring.** **Subject link - links to GCSE, Exam based questions, NEA practical skills and knowledge**	• To relate skills attitudes, concepts and knowledge learned in school to applications in the wider world. • To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Wood properties		
Week 2	Mock-up and prototyping – using card to assess suitability and links to specification		
Week 3	Costings – to work out product viability and profit margins for product.		
Week 4	Joints -variety of joints including butt joint, dowel and finger joints		
Week 5	Assembly of product Finishes – looking at a variety of wood finishes to create high quality product		
Week 6	Circuits – soldering skills and safety – what is a good joint and practice soldering		
TERM 3	**TOPIC: Night light project**	**Science – circuits** **Literacy – language to justify choices** **Subject link - links to GCSE, supporting the NEA,**	• To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Circuits – learn about components used and soldering skills		
Week 2	Circuits – learn about components used and soldering skills		
Week 3	End of rotation assessment for milestone 2 or 3 Evaluation		
Week 4			
Week 5			
Week 6			
TERM 4	**TOPIC:**		
Week 1			
Week 2			
Week 3			
Week 4			
Week 5			
Week 6			
TERM 5	**TOPIC:**		
Week 1			
Week 2			

Week 3			
Week 4			
Week 5			
TERM 6	**Topic:**		
Week 1			
Week 2			
Week 3			
Week 4			
Rollover			
Week 5	Drawing skills – shading and textures	Art – drawing skills Maths – Angles, measuring, shape **<u>Subject link –</u> Drawing presentation, NEA**	
Week 6	Drawing skills – isometric		
Week 7	Drawing skills – one-point perspective		

Year 9 Foundation Course

TERM 1	TOPIC: 3D printing CAD/CAM	*Key Skills/Subject Links	*Career links & BV
Week 1	Baseline for Milestone 1 Introduction to course TinkerCAD log on and basics	**IT skill - using specific design programs.** **Maths -working to dimensions, measuring, scale.** **Literacy – Instructional language.** **Subject link - links to GCSE, CAD/CAM, skills based, production methods, supporting the NEA**	To promote greater awareness for students about the world of work, the development of key skills and employability
Week 2	TinkerCAD skills lesson		
Week 3	Specification		
Week 4	3D printer demo, Design a creative mould which can be place in a vacuum former to make a chocolate mould – using TinkerCAD		
Week 5	Design a creative mould which can be place in a vacuum former to make a chocolate mould – using TinkerCAD		
Week 6	Design a creative mould which can be place in a vacuum former to make a chocolate mould – using TinkerCAD		
Week 7	Vacuum forming lesson Evaluation		
TERM 2	**TOPIC: 2D Design bookends**	**Maths – 2D and 3D shape measuring** **Literacy - research skills, referencing,** **IT skills – design programs** **Subject link - links to GCSE, CAD/CAM, skills based, production methods, supporting the NEA, scales of production exam topics**	• To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Design brief, specification		
Week 2	Design ideas		
Week 3	Joints research Scales of production		
Week 4	Design a creative centre piece for book ends using 2D design		
Week 5	Design a creative centre piece for book ends using 2D design		
Week 6	Use of Jigs, making a jig		
TERM 3	**TOPIC: Bookends project**	**Maths - Angles, measuring** **Literacy – production diary.** **Evaluation and justification, backing up points with evidence.** **Subject link - links to GCSE, skills based, production methods, supporting the NEA**	• To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Make bookends Create dowel joints and make a 90 degrees angle which will fit the 3D printed centre piece.		
Week 2	Make bookends Create dowel joints and make a 90 degrees angle which will fit the 3D printed centre piece		
Week 3	Attach 3D printer centre piece		
Week 4	Attach 3D printer centre piece		
Week 5	Milestone 2 assessment Assembly of product		
Week 6	Evaluation		
TERM 4	**TOPIC: Material Properties**	**Literacy – research skills** **Science – polymers, chemical reactions, smart materials** **Art – textiles** **Subject link - links to GCSE, Exam based questions**	To relate skills attitudes, concepts and knowledge learned in school to applications in the wider world.
Week 1	Introduction of properties How properties are different, hardness, strength, etc. Woods		
Week 2	Polymers		
Week 3	Papers and cards		
Week 4	Textiles		
Week 5	Smart materials		
Week 6	Metals		

TERM 5	**TOPIC: Graphics superhero packaging**	**Art – colour work** **Maths – nets, shapes,** **<u>Subject link -</u> links to GCSE, Exam based questions, NEA, materials knowledge**	• To promote greater awareness for students about the world of work, the development of key skills and employability.
Week 1	Introduction and research		
Week 2	Colour work and fonts		
Week 3	Logos		
Week 4	End of year assessment – Milestone 3 Character development		
Week 5	Nets London landmark activity		
TERM 6	**Topic: Superhero packaging**	PSHE – Recycling and the environment Maths – measuring, shape Art – colour work **<u>Subject link -</u> links to GCSE, Exam based questions, materials knowledge**	To promote awareness and understanding of work, industry, the economy and community
Week 1	Layout		
Week 2	Making card backing		
Week 3	6 R's Packaging and recycling		
Week 4	Vacuum forming Evaluation		
Rollover			
Week 5	Drawing skills – two-point perspective	Art – drawing skills Maths – Angles, measuring, shape **<u>Subject link –</u> Drawing presentation, NEA**	
Week 6	Drawing skills – Orthographic		
Week 7	Drawing skills - isometric		