

Brook Sixth Form & Academy BTEC First Engineering Level 2 Curriculum Programme Year 12

September 2026 - July 2027

Week Plan (10 Periods per Week; 3 Double, 4 Singles)	Theme / topic / unit & link to specification (where appropriate)	Whole school priority (E.g. reading, literacy, passion for subject)	Skills being developed (E.g. reading, writing, measuring and marking out, drawing)	Knowledge being introduced, developed and / or consolidated Learning Objective/s	Understanding		Implementation (Includes explanation of why you are teaching the way you are)	Differentiation (e.g. through curriculum intent)	Aspects of the wider curriculum		Personal Development
					Application of skills	Application of knowledge			Arts, music, culture, RS history, geography, MFL	Cultural Capital ¹	
Autumn Term											
Health & Safety & Engineering Sectors											
Week 1	Health & Safety Eng. Sectors	Safe guarding	Awareness & causes	Laws, risks, equipment LO/s: Students thinking safety	Identifying hazards	Using PPE, accessories	Joint theory & practise is best	Group & 1-1 support	Historical reasons behind H&S	H&S ‘savvy’	
Design Principles & Product Analysis											
Week 2	Brief Product Analysis DFMA Specification Materials	Reading Analysing Writing	Analytical	Industrial applications LO/s: Students writing briefs, spec. & analysing products	Working to briefs & a specification	Planning for making	Reading drawings	Teacher led examples	Cultural meeting other’s needs	Working to set standards	
Tools & Machinery to Make a Product & Production Methods (Carousel Teaching with Technician)											
Week 3	Identifying hazards risks linked to machinery & hand tools	Reading Writing	Risk Assessments	Identify risks LO/s: Students producing risk assessments	Milling risks dangers	In own work	Workshop & classroom	Individual & 1-1 support	Old & modern safety machining	Working safely	
Week 4	Hand Tools Milling Equip Parameters	Reading Measuring Maths	Machine operation	Use of Mill Machines LO/s: Students working & using tools & machines safely	Setting up work	Accurate machining	Workshop essential	1-1 support	Imperial versus metric	Safe machining	

¹ Cultural capital: "It is the essential knowledge that pupils need to be educated citizens, introducing them to the best that has been thought and said and helping to engender an appreciation of human creativity and achievement."

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Week 5	Industrial processes, materials & production methods	Reading Analysing	Mould & Batch making	Sandcasting base LO/s: Students produce a sandcasting	Aluminium casting	Moulding & Sand casting	Workshop essential	1-1 support	Sandcasting safety in other countries	Applying theory-make
Week 6	Casting & Milling Properties Environment	Reading Analysing	Using tools machines	Prepare base to machine LO/s: Students prepare to cast for machining	Milling principles	Safe working practises	Workshop essential	Individual & 1-1 support	N/A	Being safe & responsible
Week 7	Research & Modelling	Reading Measuring Maths	Planning	Models & patterns LO/s: Students collecting & using data in modelling	MDF model making	Moulding for Sand casting	Workshop essential	Individual & 1-1 support	Cultural model making	Applying theory-make
Week 8	Machine tools & work holding devices	Reading Analysing	Using tools machines & clamps	Sprue & slag removal LO/s: Correct safe use of hand tools	Using hand tools	Safe working practises	Workshop essential	Individual & 1-1 support	N/A	Hand skills
October ½ Term										
Extending knowledge & application of the tools; materials & industrial processes to make a product – (Carousel teaching with Technician).										
Week 9	Precision Measuring	Reading Measuring Maths	Machining Lathe mill.	Surface finish & fit LO/s: Using precision tools	Machine to drawing size	Making to correct sizes	Machine shop essential	Individual & 1-1 support	N/A	Being safe & accountable
Week 10	Quality Control & Assurance	Reading Measuring Maths	Checking & comparing	Quality control LO/s: Importance of quality checks	Precision tool use	Identify & resolve	Machine shop essential	Individual & 1-1 support	Imperial metric measuring	Checking & correcting
Week 11	Engineering Drawings	Reading Measuring Maths	Measuring Marking out	Reading drawings LO/s: Using measuring tools	Marking out holes	Marked out to drawing	Workshop essential	Group & 1-1 support	N/A	Precision tool use
Week 12	Manual Drilling & machining Robotics	Reading Measuring Maths	Setting up for drilling	Clamping drilling LO/s: Student able to clamp work & drill holes; Awareness of CNC machining	drilling out 2 holes	Safe drilling practises	Workshop essential	Individual & 1-1 support	Old & modern equipment	Safe machine working

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			Awareness of CNC capability							
Week 13	Taps & Dies Gauges New Technologies & Renewable energy	Reading Measuring	Threading int. holes	Taps & dies LO/s: Student able to cut screw threads	Tapping holes	Tapping principles	Workshop essential	Individual & 1-1 support	Hand versus machine techniques	Tap tool use
Quality Assurance, Quality Control & Sustainability										
Week 14	Standards Quality Ass. Sustainability Evaluation	Reading Measuring Maths	Checking work	Quality control LO/s: Student able to check accuracy against drawings	Checking size drawing	Using precision tool	Workshop essential	Individual & 1-1 support	European & USA drawing standards	Quality control
Xmas										
Spring Term										
Extending Knowledge & Application of the Tools; Materials & Industrial Processes to Make a Product – (Carousel Teaching with Technician). Ford Partnership Work Continued.										
Week 15	Lathes & machining	Reading Writing	Reading brief task	Lathe work LO/s: Student able to set speed & cutting tool	Lathe safety & use	Identify lathe parts	Workshop essential	Group & 1-1 support	Old & modern safety machining	Safe machine working
Week 16	Jigs & Templates Setting up laser Cutter	Reading Measuring	Cutting mild steel rod	Hand tool use LO/s: Student using jigs & templates. Set up laser & use it	Measuring & cutting	Bench / vice working	Workshop essential	Individual & 1-1 support	N/A	Safe hand tool working
Week 17	Setting up lathes	Reading Measuring	Setting up a lathe	Turning LO/s: Student able to safely operate a lathe	Measuring & setting up	Precision tool use	Workshop essential	Individual & 1-1 support	N/A	Safe machine working
Week 18	Turning	Reading Measuring	Lathe turning	Methods of turning steel LO/s: Student able to turn	Safe lathe operation	Using cutting tools	Workshop essential	Individual & 1-1 support	N/A	Safe machine working

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				down a round post						
Week 19	Threading Assembling Evaluation	Reading Measuring Writing	Threading ext. holes	Taps & dies LO/s: To cut a thread, assemble & evaluate work	Threading holes	Threading principles	Workshop essential	Individual & 1-1 support	N/A	Die tool use
Week 20	CAD Drawing Techniques Projection	Reading Measuring	Drawing protocol	CAD Types LO/s: Student applying drawing standards in own work	Producing 2D / 3D CAD work	Using Fusion 360 CAD software. 2D Design	Workshop essential	Individual & 1-1 support	N/A	Using industry standard software
February ½ Term										
Extending Knowledge & Application of Materials & Properties. Collaboration work with the Maths Department (Green)										
Week 21	Mechanical & Chemical Properties, Selection & Tests Eng. Maths	Reading Testing Calculating	Testing & recording	Quality control LO/s: Student able to check fit, finish to drawing LO/s: Applying maths to solve engineering problems	Workshop tests	Correct choice & use of materials	Workshop essential	Individual & 1-1 support Classwork	Material availability & use in different countries around the world	Investigation & Judgment
Week 22	Material Forms, Types Old & New Sustainability Eng. Maths	Reading Writing Calculating	Report writing	Writing to mark criteria LO/s: Student using evaluative techniques to write a report LO/s: As above	Report writing	Report submission	Class & CAD room	Individual & 1-1 support	N/A	Submitting report / work
Computer Aided Design & Manufacturing in Products										
Week 23	CNC, CAD & CAM	Reading Analysing	Analysing task / brief	CAD / CAM in industry LO/s: Understand terms. Model	Planning the desk tidy top	Designing the desk tidy top	CAD Room Workshop	Individual & 1-1 support	Cultural & functional designs	Creativity
Week 24	CAD / CAM Drawing Modelling Simulating	Reading Measuring Checking	2D Design & 3D CAD techniques	CAD / CAM in industry LO/s: Student able to use 2D 3D Software.	Designing desk tidy top Card Model Laser cut top	Correct size to fit post & base	CAD Room Workshop	Individual & 1-1 support Classwork	Cultural & functional designs	Creativity

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Week 24	Materials used to manufacture products	Reading Writing	Experiment Testing Recording	Material types Properties LO/s: Material test report	Knowledge into practise	Recording outcomes Report writing.	Workshop tests Classroom report writing	Individual & 1-1 support	ISO Standards	Awareness of industrial techniques
Engineering Design & Interpreting Drawing Information										
Week 25	Drawing symbols & abbreviation	Reading Writing	Knowledge & use of symbols in engineering	Drawing practise LO/s: To identify & interpret symbols abbreviations	Identifying symbols & abbreviation	Able to apply them to drawings	Classwork	Group work Individual & 1-1 support	ISO Standards	Short hand techniques
Easter										
Summer Term										
Week 26	Drawing Standards	Reading Writing	Knowledge, application of drawing techniques	Drawing types & methods LO/s: Applying standards in own work	Reading & applying techniques	Correct use of drawing standards	Classwork	Individual & 1-1 support	ISO standards	Communicate
Week 27	Engineering Design	Reading Writing Analytical	Design influences	Technology & Trends LO/s: Understanding design influences	Designing to client needs	Able to justify a design icon	Classwork	Group work Individual & 1-1 support	Fashion & Cultural influences on designs	Design & Art appreciation
Week 28	Exam Revision	Reading Writing Analysing	Revision & exam technique	Revision tips LO/s: Applying tips & methods	Learning & recalling concepts	Able to explain & justify	Classwork to improve memory retention & learning	Group work Individual & 1-1 support	N/A	Improved learning & memory retention
Week 29	Past Exam Papers Unit 9 Exam (TBC)	Reading Writing Analysing	Reading questions correctly	Explain & justify exam answers LO/s: To correctly answer exam questions	Reading exam questions properly	Providing correct & detailed responses	Classwork to practise exam techniques	Group work Individual & 1-1 support	N/A	Self-worth Personal achievement
Welding – Types & Techniques										

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Week 30	Welding equipment	Reading Writing Analysing	Identifying equipment	Machine types / parts LO/s: Student identify equipment	Setting up equipment	Follow correct safety procedures	Workshop theory into practise	Group work Classwork 1-1 support	Historical welding methods & modern techniques	Following manufacturing manuals
May 1/2/ Term										
Week 31	Gas, Electric & Resistance welding	Reading Maths	Identifying welding machines	Welding skills LO/s: Student welding metals	Producing welds	Evidence of quality welds	Workshop theory into practise	Individual & group work 1-1 support	N/A	Working safely Protecting others
Week 32	Weld Defects	Reading Writing Analytical	Identifying defects	Defect prevention LO/s: Student able to I.D. weld defects & remedy	Analysing welds Quality control	Good welding Report writing	Combine theory & practise	Classwork 1-1 support	Countries & economic limitations	Importance of quality outcomes
Week 33	Coursework moderation & submission	Reading Writing	Meeting deadlines	Collating work LO/s: Student submit final unit	Signing exam-board documents	Signing exam-board documents	Exam-board requirement	Classwork 1-1 support	N/A	Completing exam-board documents
Week 34										
Week 35										
Week 36										
Week 37										
Summer Holidays										