

CoDA Curriculum

(Design + Innovation)

(Engineering Manufacture)



Improving the life chances of all students

Why Study Design + Innovation?

The Key Stage 3 Design + Innovation curriculum combines the KS3 National curriculum for Design and technology with the KS3 National curriculum for Computing.

For the first 13 weeks of Year 7 learners complete an Introduction to D+I unit, where they experience different subject areas within the faculty. After this they commence a regular carousel rotation program until the end of Year 8, where they do units of work in: Food and Cookery (lunchtime and world foods); Fashion and Textiles (cultural influences: Mexico and Japan); Design and Technology: Material Properties (polymers and metals); Design and Technology: Systems and Devices (mechanisms and electronics); and Information and Computer Technology (e-Safety, computing basics, and Programming).

In Year 9, learners have the opportunity to study a curriculum designed to join the skills and knowledge developed in Years 7 and 8 to those needed for subjects which may be taken in Year 10. The Year 9 units of work are: Food and Cookery (food for life); Fashion and Textiles (clothing and accessories); Design and Technology: Materials (timbers); Computer-Aided Design (Fusion360); and Creative iMedia (visual identity and digital graphics).

The Key Stage 4 Design + Innovation curriculum intends to give learners the skills and knowledge needed to make progress onto the next step following their secondary education, and currently includes qualifications in: Business; Construction; Creative iMedia; Design and Technology; Engineering Manufacture; Fashion and Textiles; and Food and Cookery.

Engineering Manufacture Curriculum Intent

We aim to deliver a curriculum that will give students the skills and knowledge to:

Our KS4 Engineering Manufacture curriculum develops practical manufacturing capability alongside underpinning principles.

Students learn to interpret engineering drawings, select and process engineering materials, and work safely with tools, machines and CAD/CAM.

By integrating theory with hands-on activity, learners build problem-solving, precision, and quality-focused habits that prepare them for apprenticeships, further study, and employment.

At Key Stage 4 students will follow the specifications:

OCR Cambridge National Engineering Manufacture will encourage and enable students to:	
<ul style="list-style-type: none"> • understand and apply the fundamental principles and concepts of Engineering Manufacture, including manufacturing processes, engineering materials, manufacturing requirements and developments in engineering manufacture • develop learning and practical skills that can be applied to real-life contexts and work situations • think creatively, innovatively, analytically, logically and critically • develop independence and confidence in using skills that would be relevant to the engineering, manufacturing, process and control sector and more widely • plan manufacturing production through practical experience of manufacturing for one-off products and manufacturing in quantity • determine the sequence of operations required, recognising hazards and risks so that control measures can be implemented for safe working • interpret engineering drawings to facilitate manufacture, using a range of tools and equipment, including Computer Numerical Control (CNC) machines. 	
Students will be taught and assessed on their ability to:	
Performance Objective 1	Recall knowledge and show understanding
Performance Objective 2	Apply knowledge and understanding
Performance Objective 3	Analyse and evaluate knowledge, understanding and performance
Performance Objective 4	Demonstrate and apply skills and processes relevant to the subject area

Students will be taught and assessed on:	
R014: Principles of engineering manufacture	
Assessed by an exam 1hr30mins 40% of the overall grade.	Topics include: Manufacturing processes, Engineering materials, Manufacturing requirements, Developments in engineering manufacture.
R015: Manufacturing a one-off product	
This is assessed by a set assignment. 30% of the overall grade.	After a course that prepares learners in all of the skills they need to complete the assignment, learners will safely plan and produce a one-off product by using appropriate processes, tools and equipment. This will include: planning the production of a one-off product, measuring and marking out, safely use processes, tools and equipment to make a product.
R016: Manufacturing in quantity	
This is assessed by a set assignment. 30% of the overall grade.	Learners will learn how to manufacture using simple jigs and templates to support manufacturing in volume using Computer Aided Design (CAD) software and Computer Numerical Control (CNC) equipment. This will include: preparing for manufacture, develop programmes to operate CNC equipment, safely use processes and equipment to make products in quantity.
	They will then be set an assignment by the exam board to manufacture a product ready for a production run of 1,000.

Year 10 – Non-Examined Assessment

Topic	R015 – Manufacturing a One-off Product				
OCR Task	Task 1 – Planning the Manufacture	Task 2 – Risk Assessment	Task 3 – Measuring and marking out	Task 4 – Machining	Task 5 – Use tools and equipment
End Points (Knowledge and Skills)	<p>For full marks within this section, students must produce:</p> <ul style="list-style-type: none"> A comprehensive plan that includes all the information required to facilitate manufacture of the product. All materials needed are accurately identified. All processes, tools and equipment are appropriate and presented in a logical sequence. All health and safety issues have been considered. Appropriate quality control measures identified to support the manufacture of an effective outcome. 	<p>For full marks within this section, students must produce:</p> <ul style="list-style-type: none"> All of the potential hazards of the process are identified and the risk of occurrence for each is estimated. Appropriate control measures identified for all of the hazards. 	<p>For full marks within this section, students must produce:</p> <ul style="list-style-type: none"> All measuring equipment is selected and used appropriately. Select and safely use appropriate marking out equipment for all of the features. Able to accurately measure and mark out independently. 	<p>For full marks within this section, students must produce:</p> <ul style="list-style-type: none"> Worked safely at all times without additional instruction. Effectively applies understanding and skills to successfully produce the intended result in a way that would be fit-for-purpose. Able to use machinery to successfully manufacture the required part independently. 	<p>For full marks within this section, students must produce:</p> <ul style="list-style-type: none"> Worked safely at all times without additional instruction. Effectively applies understanding and skills to successfully produce the intended result in a way that would be fully fit-for-purpose. Able to use tools and equipment independently to successfully manufacture the part(s) and assemble the product.
What is assessed	<p>Topic Areas 1.1 and 1.2: Interpreting and engineering drawing and prepare a production plan</p>	<p>Topic Area 1.3: Risk assessment</p>	<p>Topic Areas 2.1 and 2.2: Measuring and marking out</p>	<p>Topic Area 3.1: Manually controlled machining processes</p>	<p>Topic area 3.2 and 3.3: Tools and equipment and joining techniques</p>
	<p>The above topic areas will be assessed throughout the year using:</p> <ul style="list-style-type: none"> R015 OCR-set assignment (10–12 hours): plan and manufacture a one-off product, with evidence of planning, safe working and quality checks Low-stakes quizzes and checks covering R014 drawings, materials and processes Mock/practice NEA activities to build confidence before the live assignment 				
Key Vocabulary	<p>Specification Constraint Tolerance Workflow Resources Time estimate Process planning Sequence Quality criteria Feasibility</p>	<p>Hazard Risk Control measure Likelihood Severity PPE COSHH Safe system of work Emergency procedure Legislation</p>	<p>Datum Scriber Centre punch Square Divider Calliper Micrometre Dimension Surface plate Projection</p>	<p>Lathe Milling Drilling Cutting Shearing Feed Speed Toolpath Clamping Lubrication</p>	<p>Hand tools Power tools PPE Clamp Vice File Saw Drill Wrench Maintenance</p>
Literacy Skills Developed (Writing/Oracy/Tier 2)	<p>Literacy skills developed through quality teacher craft and an embedded high expectation regarding the presentation of books. Sentence starters and tiered key words are provided every theory lesson. Opportunities taken for oracy when appropriate.</p>				
Career Links (Employability Skills, Career Opportunities)	<p>Production Planner Materials Planner Production Scheduling Coordinator Supply Chain Planner Operations Manager Manufacturing Engineer</p>	<p>Health & Safety Officer Risk Assessor / Consultant Health & Safety (EHS) Manager COSHH Assessor Compliance Officer Risk Analyst</p>	<p>Quality Inspector Metrology Technician CAD / CAM Technician Inspection Engineer Laboratory Technician Engineering Technician</p>	<p>CNC Machinist Lathe Operator / Turner Milling Machine Operator Machining Technician Tool & Die Maker Manufacturing Engineer</p>	<p>Tool Technician Maintenance Technician Workshop Technician Machine Tool Service Engineer Field Service Engineer Mechanical Fitter</p>
SMSC Links	<p>Social</p> <ul style="list-style-type: none"> Teamwork in workshops: This allows students to collaborate effectively, learning to share tools, space, and ideas while developing interpersonal skills. Role rotation: This gives students the opportunity to experience different responsibilities in the workshop, building adaptability and mutual respect. Peer support: This encourages students to support one another, with more confident learners guiding others, strengthening communication and a sense of community. <p>Moral</p>				

- **Responsible and safe practice:** This enables students to understand that safety is a shared responsibility, encouraging them to make decisions that protect themselves and others.
- **Ethical sourcing:** This allows students to consider the wider consequences of material choices, recognising their role in promoting sustainability and fairness.
- **Waste minimisation:** This develops students' appreciation for using resources efficiently, encouraging them to value materials and reduce environmental impact.

Spiritual

- **Pride in craftsmanship:** This gives students the opportunity to take satisfaction in producing quality work, building self-confidence and resilience.
- **Reflection on improvement:** This encourages students to reflect on the accuracy, finish, and functionality of their work, promoting personal growth and resilience.
- **Connection to creativity:** This allows students to see practical making as a form of creative expression, deepening their engagement with the subject.

Cultural

- **Impact of manufacturing locally/globally:** This enables students to recognise how design and production decisions affect both local communities and international contexts.
- **Heritage of UK engineering:** This allows students to appreciate the UK's historical contributions to engineering and industry, connecting past achievements to their own learning.
- **Contemporary relevance:** This encourages students to see how cultural values and expectations, such as sustainability and digital innovation, shape modern engineering practices.

The projects listed below will be completed throughout the Year 10 curriculum based on the priority skills required to complete the R015 NEA set assignment each year.

Year 10 – Skill Building Projects

Topic	R015 – Manufacturing a One-off Product			
OCR Task	Dice	Phone	Holder	Spinning Top
End Points (Knowledge and Skills)	Students will know how to square stock accurately to a finished 25 mm cube, read a simple drawing to locate/drill features (pips), plan a safe manufacturing sequence for milling/drilling, and evidence quality checks (size, edge break, visual finish).	Students will know how to interpret a drawing with angles and bend radii and plan/form a phone stand from sheet material (e.g., acrylic line-bending or sheet-metal folding), including safe heat-forming/pressing and angle verification.	Students will know how to turn two mating nylon parts to drawing, work to limits/tolerances (e.g., $\varnothing 13 +0.01/-0.2$, $20 +0.01/-0.2$), and assemble/lid the components with appropriate fit and surface finish.	Students will know how to produce a two-part lathe assembly with a specified thread (M8x1.25) , apply knurling for grip, select/justify materials (AI 7075 body, mild-steel handle), and evaluate balance/run-out for smooth spin.
Material Used	Mild Steel	Sheet Aluminum	Nylon/Acetal	Aluminum Rod & Mild Steel
Machine(s)	Milling Machine & Pillar Drill	Break Press	Centre Lathe	Centre Lathe
What is assessed	<p>Interpreting the 25 mm overall size and any shown features on the drawing; reading basic symbols/centre marks for hoe layout.</p> <p>Sequencing: secure/face/square to size (milling), mark out/centre-punch, drill pips, deburr/edge break; safe machine use.</p> <p>Tooling and setup: machine vice, parallels/1-2-3 blocks, spotting drill vs twist drill, work holding safety.</p> <p>Quality: using rule/vernier to check size, hole positions (simple gauge/template), finish/consistency across faces; recording checks.</p>	<p>Reading the drawing: Up/Down bend angles (e.g., Up 100°, Up 145°, Down 90°, Down 75°) and R values (e.g., R5, R10); linear dims/overall sizing.</p> <p>Process planning: cut/prepare edges → line-bend/press-brake with forming jig → check/adjust angles → de-protect and finish; safe handling of hot material.</p> <p>Tools/equipment: strip heater or press brake, angle gauge/protractor, edge scraper/deburring tools; risk assessment (heat, sharp edges).</p> <p>Quality: verifying bend angles/radii, symmetry, base stability, and surface finish (no scorch/crazing for plastics).</p>	<p>Reading the assembly drawing: parts list, materials (nylon, MoS₂-filled), key dims and tolerance notation; recognising which feature controls the fit.</p> <p>Turning operations: facing, rough/finish turning to size, boring/parting, chamfer/deburr; safe work holding and tool choice for engineering plastics.</p> <p>Fits & function: identifying whether the nominal/tolerance implies clearance or light interference; achieving a repeatable fit.</p> <p>Quality: measuring with vernier/micrometre, checking concentricity/shoulders; recording max/min achieved against tolerance.</p>	<p>Interpreting the drawing: materials (AI 7075 body, mild-steel handle), M8x1.25 x 20 thread call-out, knurl indication, critical diameters/lengths.</p> <p>Turning sequence: face/turn diameters, knurl, chamfer, single-point or die-cut M8 external thread; tapping/boring for mating internal thread where specified; safe speeds/feeds for AI vs steel.</p> <p>Assembly & QC: checking thread fit, spin balance, run-out, and finish; deburr/chamfer thread starts; record checks.</p>
<p>The above topic areas will be assessed throughout the year using:</p> <ul style="list-style-type: none"> • R015 OCR-set assignment (10–12 hours): plan and manufacture a one-off product, with evidence of planning, safe working and quality checks • Low-stakes quizzes and checks covering R014 drawings, materials and processes • Mock/practice NEA activities to build confidence before the live assignment 				
Key Vocabulary	Datum face parallel squaring marking out centre punch deburr vernier tolerance (max/min size—awareness)	Bend allowance (awareness) line bending forming jig spring-back inside/outside radius R5/R10 Up/Down bends angle gauge deburring	Tolerance (+/-) clearance bore shoulder chamfer countersink facing parting assembly	M8x1.25 (metric coarse) pitch external/internal thread knurl (diamond/straight) chamfer facing parting tool post compound slide
Literacy Skills Developed (Writing/Oracy/Tier 2)	Literacy skills developed through quality teacher craft and an embedded high expectation regarding the presentation of books. Sentence starters and tiered key words are provided every theory lesson. Opportunities taken for oracy when appropriate.			
Career Links (Employability Skills, Career Opportunities)	Machine/Production Operative CNC/Milling Setter Toolmaker Quality Technician Assembly/Finishing Operative	Plastics Fabricator/Sign-maker Sheet-Metal/Fabrication Operative Assembly Technician CAD/CAM for 2D profiles Retail Display/Point-of-Sale Fabrication	Lathe Operator (polymers) Component Assembler Quality/Metrology Tech Maintenance/Spare-parts Fabrication Production Planning	Precision Machinist CNC Turning Setter/Programmer Toolroom/Prototype Technician Product Assembler Quality Inspector (threads/fit, concentricity)

Year 11 - Non-Examined Assessment

Topic	R016 – Manufacturing in Quantity				
OCR Task	Task 1 – Manufacture templates	Task 2 – Produce a standard operating procedure	Task 3 – Use CAD software	Task 4 – Set up and operate CNC equipment	Task 5 – Quality control
End Points (Knowledge and Skills)	For full marks within this section, students must produce: <ul style="list-style-type: none"> Effectively applies understanding and skills to successfully produce the intended result in a way that would be fit-for-purpose. Able to accurately measure, mark out and cut out templates for the parts independently. 	For full marks within this section, students must produce: <ul style="list-style-type: none"> The SOP produced includes all the information required to manufacture the product. All of the operations required are identified in a logical and workable sequence. All of the operating parameters for the CNC equipment are identified and appropriate and should provide a satisfactory outcome without adjustment. 	For full marks within this section, students must produce: <ul style="list-style-type: none"> Produces comprehensive CAD drawings that are accurate and include all of the information required to create instructions for the CNC operation. Carries out an effective on-screen simulation of the CNC operation, making adjustments if required. Understanding and skills are used to fully export the information from CAD software to CNC equipment in a way that would be fit-for-purpose. 	For full marks within this section, students must produce: <ul style="list-style-type: none"> Worked safely at all times without additional instruction. Effectively applies understanding and skills to successfully produce the intended result in a way that would be fully fit-for-purpose. Able to set up and operate CNC equipment independently to successfully manufacture the part(s). 	For full marks within this section, students must produce: <ul style="list-style-type: none"> Provided accurate and repeatable measurements of all of the features on the drawing using appropriate methods. Effectively applies understanding and skills to successfully produce the intended result in a way that would be fully fit-for-purpose
What is assessed	Topic Area 1.1: Manufacture and use templates	Topic Areas 1.2, 1.3 and 1.4: Determine the sequence of operations, appropriate operating parameters for CNC equipment and produce standard operating procedures	Topic Areas 2.1 and 2.2: Use CAD software and program CNC machine operations	Topic Areas 3.1 and 3.2: Setting up and operating CNC equipment	Topic Area 3.3: Apply quality control methods
	The above topic areas will be assessed throughout the year using: <ul style="list-style-type: none"> R016 OCR-set assignment (10–12 hours): plan and manufacture a one-off product, with evidence of planning, safe working and quality checks Low-stakes quizzes and checks covering R014 drawings, materials and processes Mock/practice NEA activities to build confidence before the live assignment 				
Key Vocabulary	Template Profile Pattern Jig Fixture Accuracy Repeatability Marking out Transfer Alignment	Procedure Instruction Consistency Safety Compliance Step-by-step Workflow Accountability Documentation Training	2D drawing 3D modelling Parametric Extrusion Assembly Constraints Simulation Rendering Export File format	G-code Toolpath Program Spindle Feed rate Cutting speed Axis (X, Y, Z) Fixture Work holding Cycle	Tolerance Inspection Calibration Measurement Non-conformance Defect Sample Specification Acceptance criteria Continuous improvement
Literacy Skills Developed (Writing/Oracy/Tier 2)	Literacy skills developed through quality teacher craft and an embedded high expectation regarding the presentation of books. Sentence starters and tiered key words are provided every theory lesson. Opportunities taken for oracy when appropriate.				
Career Links (Employability Skills, Career Opportunities)	Template / Fixture Designer Jigs & Fixtures Engineer Production Engineer Process Planning Technician Tooling Designer	Process Engineer Quality Systems Manager Operations Manager Health & Safety / Compliance Officer Documentation / Technical Writing Specialist	CAD Technician CAD Draughtsperson Design Engineer 3D Modeller BIM Technician Product Designer	CNC Operator / CNC Machinist CNC Programmer / CNC Setter Machining Technician Tool & Die Maker Machine Shop Manager / Supervisor	Quality Control Officer Quality Inspector QC / CNC Quality Inspector Quality Assurance Manager Calibration Technician Inspection Engineer

SMSC Links	<p>Social</p> <ul style="list-style-type: none"> ● Teamwork in workshops: This allows students to collaborate effectively, learning to share tools, space, and ideas while developing interpersonal skills. ● Role rotation: This gives students the opportunity to experience different responsibilities in the workshop, building adaptability and mutual respect. ● Peer support: This encourages students to support one another, with more confident learners guiding others, strengthening communication and a sense of community. <p>Moral</p> <ul style="list-style-type: none"> ● Responsible and safe practice: This enables students to understand that safety is a shared responsibility, encouraging them to make decisions that protect themselves and others. ● Ethical sourcing: This allows students to consider the wider consequences of material choices, recognising their role in promoting sustainability and fairness. ● Waste minimisation: This develops students' appreciation for using resources efficiently, encouraging them to value materials and reduce environmental impact. <p>Spiritual</p> <ul style="list-style-type: none"> ● Pride in craftsmanship: This gives students the opportunity to take satisfaction in producing quality work, building self-confidence and resilience. ● Reflection on improvement: This encourages students to reflect on the accuracy, finish, and functionality of their work, promoting personal growth and resilience. ● Connection to creativity: This allows students to see practical making as a form of creative expression, deepening their engagement with the subject. <p>Cultural</p> <ul style="list-style-type: none"> ● Impact of manufacturing locally/globally: This enables students to recognise how design and production decisions affect both local communities and international contexts. ● Heritage of UK engineering: This allows students to appreciate the UK's historical contributions to engineering and industry, connecting past achievements to their own learning. ● Contemporary relevance: This encourages students to see how cultural values and expectations, such as sustainability and digital innovation, shape modern engineering practices.
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Throughout both Year 10 and Year 11 students will partake in aspects of R014, the theory will be tailored to the specific areas/practical projects taking place.

Topic				
R014 – Principles of Engineering Manufacturing				
OCR Topic Area	Topic Area 1 – Manufacturing Processes	Topic Area 2 – Engineering Materials	Topic Area 3 – Manufacturing Requirements	Topic Area 4 – Developments in Engineering Manufacture
End Points (Knowledge and Skills)	Students will know the key mechanical properties, how to classify and give examples of ferrous/non-ferrous metals, thermoplastics/thermosets, engineering ceramics, composites, and smart materials, and how material choice links to intended use.	Students will know the key mechanical properties, how to classify and give examples of ferrous/non-ferrous metals, thermoplastics/thermosets, engineering ceramics, composites, and smart materials, and how material choice links to intended use.	Students will know how to interpret engineering drawings (line types, dimensions, symbols), identify features and abbreviations, work with tolerances (derive max/min sizes), understand how scale of manufacture influences process/tooling choice, and distinguish QA vs QC.	Students will know the principles and benefits of JIT and MRP, the seven wastes and how reducing them improves performance, and how transportation, international standards, globalisation and sustainability/ethics influence manufacturing cost and employment.
What is assessed	<ul style="list-style-type: none"> Definitions and examples of wasting, shaping, forming, additive processes Typical equipment/tooling, materials suited to each process, and sequence of operations Comparative advantages/limitations (accuracy, surface finish, rate, cost) Basic work holding (jigs/fixtures), feeds & speeds concepts (at awareness level) Selecting an appropriate process route for a given drawing/requirement and justifying the choice Simple H&S implications linked to common processes 	<ul style="list-style-type: none"> Definitions/examples of mechanical properties: hardness, toughness, ductility, malleability, strength, elasticity, brittleness Ferrous vs non-ferrous metals; what an alloy is; common examples Thermoplastics vs thermosets and typical examples (e.g., ABS, PMMA, epoxy, melamine) Engineering ceramics (e.g., silicon carbide, aluminium oxide) – typical characteristics/uses Composites (e.g., GRP, CFRP, concrete) and difference between alloy vs composite Smart materials (e.g., shape memory alloy, thermochromic) – simple applications 	<ul style="list-style-type: none"> Line types (outline, hidden, centre) and dimensioning conventions Common abbreviations/symbols (\emptyset/diameter, R/radius, AF/across flats, CL/centre line) Representation of features: threads, countersink (CSK), counterbore (CB), etc. Tolerances: meaning of limits & fits; calculate maximum/minimum acceptable size from a stated tolerance Scale of manufacture (one-off, batch, mass, continuous) and its impact on processes, jigs/fixtures, throughput and cost Quality: difference between Quality Assurance (preventative) and Quality Control (inspection); simple sampling/inspection activities 	<ul style="list-style-type: none"> Just-in-Time (JIT) – purpose, benefits, risks (awareness) Material Requirements Planning (MRP) – what it is and why it's used Seven wastes: transportation, inventory, motion, waiting, over-production, over-processing, defects; how reducing each improves performance Role of transportation and international standards in global supply chains Influence of globalisation on employment opportunities/conditions and product cost Sustainability implications and simple ethical/economic/social/environmental considerations
Key Vocabulary	Wasting Shaping Forming Additive Turning Milling Drilling Sawing Bending Pressing Shearing Casting Injection moulding Vacuum forming Sintering 3D printing Jig Fixture Template Parameters (Feed, Speed, Pass, Setup)	Ferrous Non-ferrous Alloy Polymer Thermoplastic Thermoset ABS Epoxy Melamine Ceramic Composite GRP (Glass Reinforced Plastic) CFRP (Carbon Fibre Reinforced Plastic) Concrete Thermochromic Pigment Hardness Toughness Ductility Malleability Tensile strength	Title block Scale Datum Drawing Symbols: \emptyset , R, AF, CL, CSK, CB Thread Tolerance Limit Fit Max/Min size One-off Batch Mass Continuous QA (Quality Assurance) QC (Quality Control) Sampling Inspection Gauge Vernier	JIT (Just In Time) Lead time Stock/Inventory Seven wastes (TIMWOOD) Standardisation Compliance Logistics Supply chain Globalisation Sustainability Ethics Environmental impact
Literacy Skills Developed (Writing/Oracy/Tier 2)	Literacy skills developed through quality teacher craft and an embedded high expectation regarding the presentation of books. Sentence starters and tiered key words are provided every theory lesson. Opportunities taken for oracy when appropriate.			

<p>Career Links (Employability Skills, Career Opportunities)</p>	<p>Machine/Production Operative CNC Operator/Setter Fabricator/Sheet-metal Worker Toolmaker Additive Manufacturing Technician Workshop/Manufacturing Technician</p>	<p>Materials/Metals Technician Stores & Materials Identification Assistant Quality Technician (materials testing) Purchasing/Stock Control Fabrication/Machining Operative</p>	<p>CAD/Drawing Technician Quality Inspector/Metrology Technician CNC Setter (tolerances & setup) Production Planner (scale of manufacture) Process/Quality Documentation Assistant</p>	<p>Production Planner Stores/Inventory & MRP Assistant Logistics/Supply-Chain Coordinator Continuous Improvement/Lean Assistant Compliance/Standards Support Sustainability/Environmental Technician</p>
<p>SMSC Links</p>	<p>Social</p> <ul style="list-style-type: none"> • Teamwork in workshops: This allows students to collaborate effectively, learning to share tools, space, and ideas while developing interpersonal skills. • Role rotation: This gives students the opportunity to experience different responsibilities in the workshop, building adaptability and mutual respect. • Peer support: This encourages students to support one another, with more confident learners guiding others, strengthening communication and a sense of community. <p>Moral</p> <ul style="list-style-type: none"> • Responsible and safe practice: This enables students to understand that safety is a shared responsibility, encouraging them to make decisions that protect themselves and others. • Ethical sourcing: This allows students to consider the wider consequences of material choices, recognising their role in promoting sustainability and fairness. • Waste minimisation: This develops students' appreciation for using resources efficiently, encouraging them to value materials and reduce environmental impact. <p>Spiritual</p> <ul style="list-style-type: none"> • Pride in craftsmanship: This gives students the opportunity to take satisfaction in producing quality work, building self-confidence and resilience. • Reflection on improvement: This encourages students to reflect on the accuracy, finish, and functionality of their work, promoting personal growth and resilience. • Connection to creativity: This allows students to see practical making as a form of creative expression, deepening their engagement with the subject. <p>Cultural</p> <ul style="list-style-type: none"> • Impact of manufacturing locally/globally: This enables students to recognise how design and production decisions affect both local communities and international contexts. • Heritage of UK engineering: This allows students to appreciate the UK's historical contributions to engineering and industry, connecting past achievements to their own learning. • Contemporary relevance: This encourages students to see how cultural values and expectations, such as sustainability and digital innovation, shape modern engineering practices. 			