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| **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]](#footnote-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 |
| 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  Awareness of CNC capability | 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 |
| 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** |  |  |  |  |  |  |  |  |  | |  |
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| **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 down a round post** | Safe lathe operation | Using cutting tools | Workshop essential | Individual &  1-1 support | N/A | | Safe machine working |
| 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. 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. support   Classwork | Cultural & functional designs | | Creativity |
| 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** | | | | | | | | | | | |
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| **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 | | | | | | | | | | | |
| 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** | | | | | | | | | | | |

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.” [↑](#footnote-ref-1)