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| **Week**  **Plan**    **(4 Periods per**  **Week;**  **1 Double, 2 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 | | | | | | | | | | | |
| Week 1 | Health & Safety | 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 | Reading Analysing | Analytical | Industrial applications  **LO/s: Students writing briefs & analysing products** | Working to briefs | Planning for making | Reading drawings | Teacher led examples | Cultural meeting other’s needs | | Working to set standards |
| Tools & Machinery to Make a Product (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 | 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 |
| Ford Partnership Work - Introduction to Ford Motor Company & Practice (In Green) | | | | | | | | | | | |
| Week 5 | Industrial processes  History of Ford & Dagenham | Reading Analysing | Mould & Batch making | Sandcasting base  **LO/s: Students produce a sandcasting**  **LO/s: Ford Motor Company & opportunities** | Aluminium casting | Moulding & Sand casting | Workshop essential | 1-1 support | Sandcasting safety in other countries | | Applying theory-make |
| Week 6 | Casting & Milling | 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  Ford Design Eng. Systems | Reading Measuring  Maths | Planning | Models & patterns  **LO/s: Students collecting & using data in modelling**  **LO/s: Know Design Cycles 1-2** | MDF model making | Moulding for Sand casting | Workshop essential | Individual &  1-1 support | Cultural model making | | Applying theory-make |
| Week 8 | Workshop  equipment | Reading Analysing | Using tools machines | 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). Ford Partnership Work Continued. | | | | | | | | | | | |
| Week 9 | Precision  Measuring  Ford Design Eng. Systems | Reading Measuring  Maths | Machining  Lathe mill. | Surface finish & fit  **LO/s: Using precision tools**  **LO/s: Know Design Cycles 3-4** | Machine to drawing size | Making to correct sizes | Machine shop essential | Individual &  1-1 support | N/A | | Being safe & accountable |
| Week 10 | Quality Control | 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  Ford Component Case Study | Reading Measuring  Maths | Measuring Marking out | Reading drawings  **LO/s: Using measuring tools**  **LO/s: Using systems to evaluate / decide** | Marking out holes | Marked out to drawing | Workshop essential | Group & 1-1 support | N/A | | Precision tool use |
| Week 12 | Manual Drilling & machining  An Introduction to CNC | 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  Ford EV Charge Handle Project | Reading Measuring | Threading int. holes | Taps & dies  **LO/s: Student able to cut screw threads**  **LO/s: To design a new Ford EV charger handle** | Tapping holes | Tapping principles | Workshop essential | Individual &  1-1 support | Hand versus machine techniques | | Tap tool use |
| Quality Assurance & Quality Control | | | | | | | | | | | |
| Week 14 | Standards  Quality Ass. | 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 | Reading Measuring | Cutting mild steel rod | Hand tool use  **LO/s: Student able to use various jigs & templates to check accuracies** | 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 | Reading Measuring | Threading ext. holes | Taps & dies  **LO/s: Student able to cut a thread** | Threading holes | Threading principles | Workshop essential | Individual &  1-1 support | N/A | | Die tool use |
| Week 20 | Assembling  Checking  Ford Robotics | Reading Measuring | Checking work | Quality control  **LO/s: Student able to use precision tools**  **LO/s: Student able to program a robot. Understands robots in industry** | Checking size drawing | Using precision tool | Workshop essential | Individual &  1-1 support | N/A | | Quality control |
| **Spring ½ Term** | | | | | | | | | | | |
| Product Evaluation & Techniques | | | | | | | | | | | |
| Week 21 | Finishing  Aesthetics | Reading Measuring | Assembly work | Quality control  **LO/s: Student able to check fit, finish to drawing** | Fit & finish | Quality control | Workshop essential | Individual &  1-1 support | N/A | | Quality outcomes |
| Week 22 | Evaluating  products | Reading Writing | Report writing | Writing to mark criteria  **LO/s: Student able to use evaluative techniques to write an evaluation** | Report writing | Report submission | Class & CAD room | Individual &  1-1 support | N/A | | Submitting report / work |
| Computer Aided Design & Manufacturing Products | | | | | | | | | | | |
| Week 23 | CNC, CAD & CAM  Ford EV Charge Handle Project | Reading Analysing | Analysing task / brief | CAD / CAM in industry  **LO/s: Student able to understand terms**  **LO/s: Student clear on the set task & expectations.** | Planning the desk tidy top | Designing the desk tidy top | To complete the mini project | Individual &  1-1 support | Cultural & functional designs | | Creativity |
| Week 24 | CAD Drawing | Reading Measuring | 2D Design techniques | CAD / CAM in industry  **LO/s: Student able to use 2D Design** | Designing desk tidy top | Correct fit to base | To cover the specification | Individual &  1-1 support | Cultural & functional designs | | Creativity |
| Week 24 | Testing Trialling | Reading  Measuring | Card model test piece | Checking by templates  **LO/s: Student produces own template** | CAD cut template | Working to drawings | To test sizes before making | Individual &  1-1 support | N/A | | Double checking |
| Week 25 | Laser Cutting | Reading Writing | CNC Laser operation | Advantage & limitations  **LO/s: Student able to use Laser to cut template.** | Setting up using lasers | Able to safely operate | Identifying cutting limits | Group work | N/A | | New technology |
| **Easter** | | | | | | | | | | | |
|  | | | | | | | | | | | |
| **Summer Term** | | | | | | | | | | | |
| Extended Knowledge & Application of CAD/CAM & Production Methods | | | | | | | | | | | |
| Week 26 | Production methods  Ford Dunton Tech. Centre Visit | Reading Writing | CNC laser machine | Batch production  **LO/s: Student able to use ‘Nest’ CAD/CAM work**  **LO/s: Student will experience motor vehicle industrial practices** | CAD/CAM applications | Able to set up & make | Combine theory & practise | Individual &  1-1 support | N/A | | Working on own safely |
| Week 27 | Fusion 360  3D Printing  Ford Electric Motor making | Reading Writing  Maths  Science | Research & reporting | Alternative CNC equip.  **LO/s: Student able to use 3D CAD**  **LO/s: Student understand electric motor concepts.** | Finding other CNC’s | Good report writing | Further CAM experience | Classwork | N/A | | Researching & finding |
| Week 28 | CNC versus manual work | Reading Writing | Report writing | Writing to mark criteria  **LO/s: Student understands advantages of new technology** | Report writing | Report submission | Class & CAD room | Individual &  1-1 support | N/A | | Submitting report / work |
| Week 29 | Quality Assurance | Reading Analysing | Analysing  QA Systems | Quality in industry  **LO/s: Student understands use of QA techniques** | Quality assurance | Identify QC methods | Unit requirement | Individual &  1-1 support | N/A | | Own work improvement |
| Week 30 | Mechanisms & Control  Ford Reverse Engineering | Reading Writing  Science  Maths | Electro-mechanical Systems | Control type systems  **LO/s: Student understands e-mech. concepts**  **LO/s: student understands Industrial copying concepts** | Concepts | Electrical  Pneumatic  mechanical | AQA requirement | Group work | Developing a ‘culture’ of teamwork | | Using kits to problem solve |
| **Spring ½ Term** | | | | | | | | | | | |
| Electronics & New Technologies | | | | | | | | | | | |
| Week 31 | Electronics &  Components | Reading Maths | Reading Checking | Components | Checking own work | Evidence of Q Control | Check own & others’ work | Individual & group work | N/A | | Self & work assessment |
| Week 32 | Modern Materials & Technologies | Reading  Writing | Research Reporting | Robots, AI, Nano &  SMART Materials  **LO/s: Student able to I.D. parts & explain what they do** | Research & find | Good report writing | Combine theory & practise | Classwork  1-1 support | N/A | | Find & present Info. |
| Week 33 | Sustainability  Recycling  Ford Management Review | Reading  Writing | Production methods | Lean manufacture  **LO/s: Student understands types & choice of processes**  **LO/s: To case show work with Ford** | Research & find | Suggested methods | Internet best method | Classwork  1-1 support | N/A | | Need to reduce waste  Public speaking |
| Week 34 | Welding & Types | Reading  Writing | Writing to AQA criteria | Report writing  **LO/s: Student understands welding & brazing types** | Report submission | Class & CAD room | Individual &  1-1 support | Classwork  1-1 support | Submitting report / work | | Writing to mark criteria |
| Week 35 | AQA NEA Theme Topic | Reading  Writing | Planning Organisation | Identify need  Solutions  **LO/s: Student analysing NEA task** | Identify techniques | Appropriate  selection | NEA preparation | Class & group work | Cultural changes | | Decision making |
| Week 36 | NEA Context & Brief | Reading  Writing | Problem solving | Engineered solutions  **LO/s: Student researching round the task.** | Identify solutions | Design to solve issues | NEA coursework | Class & group work | Cultural changes | | Self-analysis Investigation |
| Week 37 | Project planning | Reading  Writing | Research  organising | Solving problems  **LO/s: Student produces a project Gantt chart for the year** | Analysis  Research | Designing solutions | Getting pupils thinking | Classwork  1-1 support | Historical, Cultural, Geographical, Arts | | Organisation Investigation |
| **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)