10 ENGINEERING

SUMMER TERM 1

MAGHULL HIGH SCHOOL – CURRICULUM MAP

HALF TERM	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
TOPIC (S)	OBJECTIVE. **Learning aim B: Investigate a given engineered product using disassembly techniques** Teaching content B1: Practical engineering skills. Component 2, B1, Practical engineering skills – Observing and recording skills. Component 2, B2, Safe use of disassembly techniques. Component 2, B2, Safe use of tools and equipment.	Product design specification (PDS) [Component 2, B3, Product design specification. Component 2, B2, Safety and risk assessment. Component 2, B1, B2 and B3, Investigate a given engineered product using disassembly techniques.	Component 2, C1, Engineering make process – defining the problem, developing possible solutions, choosing a solution. Component 2, C1, Engineering make process – making using engineering processes. Component 2, C1, Engineering make process – inspecting and testing chosen solution, evaluating outcome of project.	Component 2, C2, Developing a production plan. Component 2, C2, Awareness of risks and hazards for making processes.	Component 2, C2, Safe preparation, good housekeeping and close down of the work area; Making skills associated with the product to be produced – appropriate set-up of the work area/machine, adaptation according to inspected outcomes. Component 2, C2, Making skills associated with the product to be produced – choosing suitable tools.	Choosing suitable tools. Component 2, C2, Skills in observing and recording techniques. Component 2, C1, C2, Plan the manufacture and safely reproduce/inspect/test a given engineered component.
Knowledge: Homework and ‘Do Nows’ using Component 2 Learning Aims.						

Knowledge & Skills development	A1 Materials • Engineering material categories: o ferrous, e.g. mild steel, wrought iron, stainless steel o non-ferrous, e.g. aluminium, titanium, copper, silver, zinc o thermosetting polymers, e.g. phenol-formaldehyde, polyimides, polyurethane o thermoforming polymers, e.g. polyethylene, polypropylene, acrylic. • Properties of engineering materials: o strength o hardness o toughness. • Characteristics of engineering materials, such as: o machinability o workability o durability. A2 Components • Types of components, such as: o proprietary, e.g. rivet, nut and bolt, screw, key, mechanical fixings, electronic components, such as resistors, capacitors, fuses, diodes o product specific, e.g. bush, flange, printed circuit board (PCB). • Characteristics of components, e.g. permanent/semi-permanent, sizes/dimensions, surface roughness, values, fixing methods. A3 Processes Types of engineering processes: • cutting, e.g. drilling, sawing, filing, shearing • shaping, e.g. turning, milling • forming, e.g. forging, casting, extruding, moulding, folding, bending • joining, e.g. fastening, bonding, soldering, brazing
Assessment / Feedback Opportunities	Cold calling to check for understanding. Visual check on note taking. Verbal formative and summative feedback.
Cultural Capital	Pupils develop understanding of Engineering sectors and roles involved.
SMSC / Promoting British Values **(Democracy, Liberty, Rule of Law, Tolerance & Respect)**	Patience and tolerance of others whilst following social distancing rules. Career opportunities that are available to diligent pupuils.
Reading opportunities	Reading research on Engineering sectors and organisations. Reading on Engineering.
Key Vocabulary	Engineering, aerospace, automotive, communications, electrical/electronics, mechanical, environmental, transport, rail and marine
Digital Literacy	Use internet to help research.
Careers	Pupils develop knowledge of the following engineering sectors and the roles included; aerospace, automotive, communications, electrical/electronics, mechanical, environmental, transport, rail and marine.