## **10 ENGINEERING**

## AUTUMN TERM 2

## MAGHULL HIGH SCHOOL – CURRICULUM MAP



HALF TERM	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
TOPIC (S)	Objective: Component 1, B1, Producing initial design proposals – researching existing products. Component 1, B1, Producing initial design proposals – researching existing products. Component 1, B1, Producing initial design proposals – producing design sketches in 2D and 3D.	Component 1, B1, Generating final design solutions – 2D drawing techniques. Component 1, B1, Generating final design solutions – detailed drawings, circuit diagrams. Component 1, B1, Generating final design solutions – 3D printing. Component 1, B1, Generating final design solutions –	Component 1, B1, Making final design solution decisions – selection of making techniques. Component 1, B1, Making final design solution decisions – considering quality requirements. Component 1, B1, How employees work in a team and peer review during the engineering design and make process with the customer as	COMPONENT 1. LEARNING AIM B ASSES <b>DEADLINE. 28/1/2022.</b>	SMENT.	
	Component 1, B1, Producing initial design proposals – using creative thinking and evaluation techniques. Component 1, B1, Computer-aided design (CAD) drawings.	Component 1, B1, Making final design solution decisions – selection of materials.	Component 1, B1, How employees use generic skills – respect for others, professionalism, working relationships, collaborative skills. Learning aim B: assessment practice Revision of Learning aim B1			

	[Component 1, B1, Explore engineering skills through the design process.					
Solidworks instruction and practice throughout term.						
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 /	Cold calling to check for understanding.					
Feedback Opportunities	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.					
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.				