CORE KNOWLEDGE

What I will know and understand by the end of Year 10.

This year in **Engineering** we will be learning: Component 2: Investigating an Engineering Project		This links to:	Key vocabulary:
1	**Learning aim A: Understand materials, components and processes for a given engineered product:** Be able to explain why engineering materials and proprietary components are used in given engineered product and why engineering processes are used to make given engineered products.	Materials research, woods, metals, plastics./polymers Tools, Machinery product and component specifications and requirements	Properties and characteristics of engineering materials: strength, hardness, toughness, machinability, workability, durability. Engineering material categories: ferrous, non-ferrous, thermosetting polymers, thermoforming polymers. Types of engineering processes: cutting, shaping, forming, joining
2	**Learning aim A: Understand materials, components and processes for a given engineered product:** Be able to evaluate engineering materials, proprietary components and processes used when making given engineered products.	Evaluation of products and components. Analysis of products and components ACCESS FM - Analysis	
3	**Learning aim B: Investigate a given engineered product using disassembly techniques:** Systematically disassemble an engineered product, describe how each of its main components links together and justify a detailed product design specification.	Safe use of tools and equipment – disassembly/reassembly tools, Observing, measuring and recording skills,	
4	**Learning aim C: Plan the manufacture of and safely reproduce/inspect/test a given engineered component:** Create a detailed plan to produce an engineered component in the correct sequence that covers the correct processes, equipment, materials and inspection techniques.	Awareness of risks and hazards for making processes. • Safe preparation, good housekeeping and close down of the work area. • Skills in observing	
5	**Learning aim C: Plan the manufacture of and safely reproduce/inspect/test a given engineered component:** Effectively produce an engineered component using a range of processes and inspect against given quality standards to confirm compliance.	Making skills associated with the product to be produced, e.g. choosing suitable tools, appropriate set up of the work area/machine, adaptation according to inspected outcomes.	
6	**Learning aim C: Plan the manufacture of and safely reproduce/inspect/test a given engineered component:** Evaluate the success of the planning and production of an engineered component and make recommendations for improvements to the process.	Developing possible solutions. • Making using engineering processes. • Inspecting and testing chosen solution. • Evaluating outcome of project.	

Target Grade		AP1		AP2		AP3	

CORE KNOWLEDGE

What I will know and understand by the end of Year 11.

This year in **Engineering** we will be learning: Component 1 and Component 3		This links to:	Key vocabulary:
1	C1: Learning aim A: Understand engineering sectors, products and organisations, and how they interrelate: Evaluate how engineers from different sectors cooperate to generate an engineered product, with reference to sizes of organisations and the job roles involved.	Engineering roles and responsibilities, Engineering Careers	Organisations Sectors Corporate
2 & 6	C3: Synoptic Assessment: Able to analyse the brief, recognising the problems that need to be solved. Suggest alternative solutions to meet the brief and are technically correct.Show an understanding of health and safety procedures. Make appropriate observations and record results accurately. Use a range of analytical techniques in order to produce detailed conclusions. Evaluate processes and solutions in detail to ensure the brief is met.	Manufacturing processes Safety considerations Designs of solution Material Characteristics	Tolerance Attributes Interpretation Anomalies
3	C1: Learning aim B: Explore engineering skills through the design process: Produce design proposals, compare in relation to the engineering brief and develop an improved final solution using CAD and modelling.	Design Specifications ACCESS FM CAD skills in KS3	Component Product Specific
4	C1: Learning aim B: Explore engineering skills through the design process: Explain successful features of the design process, with reference to the engineering brief and peer review.	Hand, tools, machinery and equipment studied in KS3. Design Process	Considerations Quality Modifications
5	C1: Learning aim B: Explore engineering skills through the design process: Justify the development of an improved final solution and evaluate use of the design process, with reference to the engineering brief and peer review.	CAD/CAM equipment Product evaluations and developments KS3	CAD/CAM- Computer Aided Design/Manufacture

Target Grade		AP1		AP2		AP3	