Topic: Milling, Measuring, visit to Marches. SUM 2		Duration: 12 lessons	Composite:
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Shape, Slot, Drill Vertical Milling Machine, Machine Head, Cutting tool, Machine Vice, Angle plate, Vee- Block. Safety boots, safety goggles, cloth, brush, rake. X-Y-Z Axis. Parallels, Fixture (hold, support, locate). High Speed Steel. Digital Calliper, Vernier Calliper, Radius Gauge, Digital Micrometer, Vernier micrometer. Dial indicator, Telescopic Gauge. Feeler gauge. Internal, External,	• What is the difference between vertical and horizontal milling machine? • Why must you always use a cloth when touching the tool? • What are parallels? Why are they used? • What is a holding tool? • Why must you always use the correct type of holding tool be used? • What shape material is held in a vee block? • How do you find out the correct cutting and feed rate? • Why can a micrometer only measure small objects? • Does a telescopic gauge measure an internal or external measurement? • Why does a radius gauge have a 'set' of gauges? • How do you read a Vernier calliper? • How do you read a Vernier micrometer? • What are the advantages of a digital measuring device? • What is the disadvantage of a digital measuring device?	• What does a milling machine do? • Name 5 specific safety requirements when on a milling machine? • What ppe must be worn when using a milling machine? • What is zeroing? • Which is the x, y and z axis? • What are cutting rate and feed rate? • What does the quill do? • What is a fixture? Why is it needed when drilling a number of holes? • What are the tools used on a milling machine made from? • What are the 3 types of measurement that can be done with a Digital or Vernier calliper? • What is zeroing? Why is it necessary? • How is a digital measuring device different from a Vernier measuring device? • What does a radius gauge measure? • What does a feeler gauge measure? • What does a dial indicator measure?	Using core knowledge learnt throughout years 7,8,9 and 10. Cross over knowledge from previous module Such as: Safety, Materials types, Material properties, processes, tolerances, Reading drawing in orthographic and Isometric.

Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:
Reading and understanding learner assignment brief and technical drawings.	Taking part in class discussions. Interfacing with college personnel.	Use of appropriate technical terms in record of make .	Find and correct own mistakes and problem solve.	Independent time management. Independent decision making and problem solving Using key skills used by engineers.

SEND

Key Vocabulary introduced using precision teaching prior to new topic.

- Linked to prior knowledge from year 7,8, 9 and 10 to aid independence. Repeating of keywords.
- Additional curriculum time allocated to those authorised by exam board, to support processing speed.
- Project chosen so that pupils visit and become familiar with a local college. Work can be used at apprenticeship or engineering interviews, work-related to support the pathway into adulthood
- Learners asked to complete work that will enable them to get Dist * grade, supporting learner aspirations
- Project chosen to support cross curricular links maths and science, supporting non-verbal reasoning
- Technology: software (word, powerpoint) used to support accessibility
- Skills ordered logically and as individual tasks to support accessibility
- Opportunities for low entry/high ceiling activities (grading from Level 1 to Level 2 Dist *)