Subject :	Engineering

	September to May
Scheme title	**Engineering Manufacture**
Purpose of scheme	To ensure that all pupils the **technical** and **practical** expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. To build and apply a **repertoire** of knowledge, understanding and skills in order to make high-quality prototypes and products
Knowledge in sequence	Unit R114 will develop learners' knowledge and understanding of engineering materials and processes, and their application in the manufacture of engineered products. The content of this unit includes basic engineering processes, allowing for a practical approach to be taken in the delivery of the unit. This unit also covers types of engineering materials such as ferrous and non-ferrous metals, alloys, polymers, thermosetting plastics, ceramics, composites, smart materials and new and emerging materials. Learners will understand properties of engineering materials and learn the theory of hand and machine skills to engineer a product. On completion of this unit, learners will understand how the properties and characteristics of
Skills	Learners should complete the learning unit R114 before completing assessment of the other 3 units (R115, R116) within this qualification, as teaching of this unit will develop key knowledge, skills and understanding which will be applied and assessed throughout the other units. In Unit R114, learners will develop the following knowledge, skills and understanding which can be applied to all other optional units within the qualification.
Key Words	Ferrous Metals Those Metals Contain IRON (Fe). Non-ferrous Metals Metals which do not contain IRON Alloys A mixture. of two or more metals. Thermoplastics Can be remoulded numerous times with the application of heat. Thermoset Plastics Polymers which cannot be remoulded once set in shape. Ceramics Products made from clay and similar inorganic materials (sand), products such as pottery, brick, cement or glass. Composites A material made from two or more different materials that, when combined, are stronger than those individual materials by themselves. Smart Material Materials which have properties that can be significantly changed in a controlled fashion by external stimuli, such as heat, moisture, electric or magnetic fields, light.
End Point	R109 and R110 End of Year 10
Assessment method	Working through the associated booklet generated for Unit R109 contains past paper examples for each material category which pupils work on after the knowledge has been delivered. Assessment using Past Paper questions to be carried out at the end of each Half Term. Lesson 7 / Lesson 14 / Lesson 19 / Lesson 26. Final 1-hour examination (6 questions) Questions 1 & 2 – Lo1 Question 3 – Lo2 Question 4 & 5 – Lo3 Question 6 – Lo4 Synoptic Learning; Learners will be able to apply knowledge and understanding gained in this unit to help develop their skills further during the completion of Units R110, R111 and R112.(NEA) and vice versa.