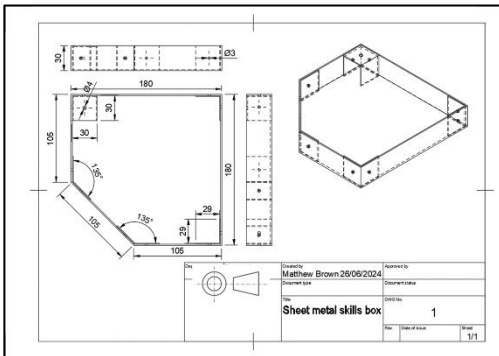


	HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Year 10	Vision: To provide TRS students with the understanding and skills gained through this qualification to progress onto an apprenticeship in the engineering industry through a variety of occupations that are available within the industry, such as technical writing, technical sales, or as an engineer in one of the many different sectors across the industry, such as pharmaceuticals, aerospace or construction. In addition, to provide all students with a range of transferable skills and attributes so they can contribute positively to society and make better life choices.						Introduction to: 1. Understand different engineering disciplines and how their application has solved problems and shaped the modern world through projects and products. Understand the health and safety legislation governing the engineering industry and its purpose. 2. Understand how SI units of measurement are used in engineering products and projects. Understand how equations of SI units are derived from base units and how the unknown factor can be found. Understand how mathematical and scientific equations are used in engineering disciplines to calculate energy, force, motion, electrical and geometric shapes. Understand how equations for properties can be used to evaluate the unknown factor. 3. Understand the British Standard (BS) 8888 for 2D and 3D engineering drawings. Understand the elements that are included in an engineering drawing. 4. Understand how materials exhibit properties and characteristics in engineering products and projects. 5. Understand health and safety, control measures, and safe and correct use of common tools, equipment and machines used in the engineering industry for manufacturing, including those used for marking out, cutting, modifying, joining and finishing. Understand the safe and correct use of common tools, equipment and machines used in the engineering industry. 6. Understand how to produce hand-drawn engineering drawings, apply specific drawing conventions and use layouts recognised within the engineering industry, following British Standard (BS) 8888. 7. Understand CAD software to produce engineering drawings. The learner will understand the specific drawing conventions and layouts recognised within the engineering industry, following British Standard (BS) 8888. 9. Understand a range of processing skills and manufacturing techniques – preparing, modifying, joining and finishing techniques applied to materials for a manufacturing task. The learner will understand the safe and correct use of tools, equipment and machines.
	1. Engineering disciplines 1.1.1. Engineering discipline skills 1.2. The health and safety legislation governing engineering 1.2.1. Health and safety legislation 16 lessons	8 lessons 3. Reading engineering drawings 3.1. Reading engineering drawings 3.1.1. Drawing conventions 3.1.2. British Standards (BS) 6. Hand-drawn engineering drawings 6.1. Hand-drawn engineering drawings 6.1.1. A freehand sketch 6.1.2. A hand-drafted isometric drawing sheet 6.1.3. A hand-drafted orthographic drawing sheet 4 lessons Remaining curriculum time to address misconceptions	4. Properties, characteristics and selection of engineering materials 4.1. Properties and characteristics of materials 4.1.1. Properties 4.1.2. Characteristics 4.1.3. Materials 2. Applied science and mathematics in engineering 2.1.1. SI units of measurement 2.1.2. Application of base SI units 2.2. Equations used to calculate energy, force, motion, electrical and geometric shapes 2.2.1. Equations for properties 2.2.2. Application of equations 12 lessons Remaining curriculum time to address misconceptions	6. Hand-drawn engineering drawings 6.1. Hand-drawn engineering drawings 6.1.1. A freehand sketch 6.1.2. A hand-drafted isometric drawing sheet 6.1.3. A hand-drafted orthographic drawing sheet 8 lessons 7. Computer-aided design (CAD) engineering drawings 7.1. CAD engineering drawings 7.1.1. A CAD isometric drawing sheet 7.1.2. A CAD orthographic drawing sheet 7.1.3. The uses of CAD 11 lessons	Complete practise synoptic project 1 - Key knowledge focus – metal, polymer and timber modification and joining methods Brief – engineer a standard component storage box  9. Applied processing skills and techniques 9.1. Skills and techniques 9.1.1. Prepare materials 9.1.2. Modify shape and size of materials 9.1.3. Join materials 9.1.4. Finish materials 9.2. Safe and correct use of tools, equipment and machines 9.2.1. Preparation and use of tools, equipment and machines 9.2.2. Control measures 5. Engineering tools, equipment and machines 5.1.1. Marking out 5.1.2. Modification 5.1.3. Joining 5.1.4. Finishing 5.2. Safe and correct use 5.2.1. Control measures 16 lessons		

Literacy – explicitly explain all new terminology (tier 3 words) half termly students to make a glossary of terms in the back of their books. Extensive note taking and writing stamina build up.



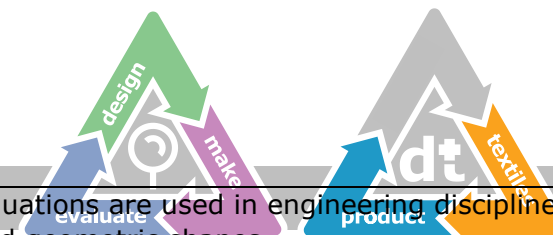






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	HT1	HT2	HT3	HT4	HT5	HT6	Threshold concepts
Year 11	Complete FULL practise synoptic project 2 - key knowledge focus – metal, polymer and timber modification and joining methods Brief – engineer an adjustable desk lamp		NEA synoptic project to be started 18 hours <u>January</u> <i>The internal synoptic project is a formal</i>	Unit 1 examination preparation. Revisit and completion of content area work booklets. Multiple choice, diagnostic style questions and extended written response.	Unit 1 exam	EXAM LEAVE	Recall of and build upon: 1. Understand different engineering disciplines and how their application has solved problems and shaped the modern world through projects and products. Understand the health and safety legislation governing the engineering industry and its purpose. 2. Understand how SI units of measurement are used in engineering products and projects. Understand how equations of SI units are derived from base units and how the unknown factor can be found.

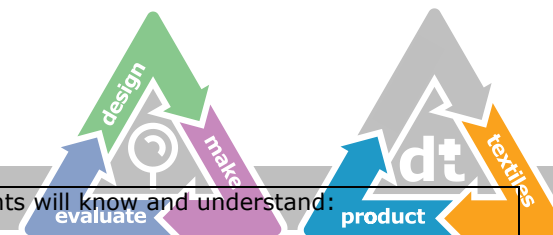


Literacy – explicitly explain all new terminology (tier 3 words) half termly students to make a glossary of terms in the back of their books. Extensive note taking and writing stamina build up.	1. Materials research and materials selected 2. Hand-drafted engineering drawing(s) 3. Engineering drawings using CAD software 4. Production plan 5. Functioning scale model manufacture 6. Evaluation of your final product A comparable project brief in-line with the released brief requirements. Content areas to be covered include: 3. Reading engineering drawings 3.1.2. British Standards (BS) 8. Production planning techniques 8.1. Project planning 4. Properties, characteristics and selection of engineering materials 6. Hand-drawn engineering drawings 6.1. Hand-drawn engineering drawings 6.1.1. A freehand sketch 6.1.2. A hand-drafted isometric drawing sheet 6.1.3. A hand-drafted orthographic drawing sheet 7. Computer-aided design (CAD) engineering drawings 7.1. CAD engineering drawings 7.1.1. A CAD isometric drawing sheet 7.1.2. A CAD orthographic drawing sheet 7.1.3. The uses of CAD	<i>assessment that requires the learner to independently apply an appropriate selection of knowledge, understanding, skills and techniques, developed through the full course of study, in response to a real-world situation, to enable them to demonstrate an integrated connection and coherence between the different elements of the qualification.</i>				Understand how mathematical and scientific equations are used in engineering disciplines to calculate energy, force, motion, electrical and geometric shapes. Understand how equations for properties can be used to evaluate the unknown factor. 3. Understand the British Standard (BS) 8888 for 2D and 3D engineering drawings. Understand the elements that are included in an engineering drawing. 4. Understand how materials exhibit properties and characteristics in engineering products and projects. 5. Understand health and safety, control measures, and safe and correct use of common tools, equipment and machines used in the engineering industry for manufacturing, including those used for marking out, cutting, modifying, joining and finishing. Understand the safe and correct use of common tools, equipment and machines used in the engineering industry. 6. Understand how to produce hand-drawn engineering drawings, apply specific drawing conventions and use layouts recognised within the engineering industry, following British Standard (BS) 8888. 7. Understand CAD software to produce engineering drawings. The learner will understand the specific drawing conventions and layouts recognised within the engineering industry, following British Standard (BS) 8888. 8. Understand how to plan a manufacturing task safely and on time. 9. Understand a range of processing skills and manufacturing techniques – preparing, modifying, joining and finishing techniques applied to materials for a manufacturing task. The learner will understand the safe and correct use of tools, equipment and machines. Understand how to maintain safe and correct use of common tools, equipment and machines used in the engineering industry for manufacturing techniques.
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Home learning – extended written response past paper questions to be issued once per half term.

Curriculum Intent

Year 7 (26) weeks	Year 8 (26) weeks	Year 9 (26) weeks	Year 10	Year 11
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			By the end of Year 10 students will know and understand:	By the end of Year 11 students will know and understand:
			• how different engineering disciplines are applied to projects and products. The learner will know and understand the health and safety legislation that influences engineering. • how the engineering industry complies with government legislation • the personal safety measures for each engineering discipline. This will include personal protective equipment and an understanding of the relevant health and safety requirements to ensure they comply with legislation • understand how SI units of measurement are used in engineering products and projects • understand how mathematical and scientific equations are used in engineering disciplines to calculate the properties of energy, forces and motion, electrical and geometry in the development of products and projects • know how to read and interpret engineering drawings accurately. • specific drawing conventions used throughout the engineering industry, and the purpose of using British Standards • how materials exhibit properties and characteristics in engineering products and projects • the health and safety, control measures, safe and correct use of common tools, equipment and machines used in the engineering industry for manufacturing including those used for marking-out, cutting, modifying, joining and finishing • the safe and correct use of common tools, equipment and machines used in the engineering industry • how to produce hand drawn engineering drawings • apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard.	• how to use CAD software to produce engineering drawings. • How to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard BS 8888 • to plan the manufacturing process of an engineered product, for a manufacturing task. The learner will be able to plan the process, considering the individual stages of manufacture, to include health and safety factors • a variety of processing skills and manufacturing techniques: preparing, modifying, joining and finishing techniques applied to materials for a manufacturing task, whilst maintaining safe and correct use of tools, equipment and machines • how to maintain safe and correct use of common tools, equipment and machines used in the engineering industry whilst undertaking manufacturing techniques Also see curriculum intent for Year 10 which applies to November examination resit.