

Werneth Engineering Curriculum KS4

		Year 10	Year 11
Autumn 1	Content (Why)	Develop practical workshop skills through the design and manufacture of a Product (as set out by exam tasks) . Pupils will build on KS3 knowledge by measuring, marking, cutting, shaping, processing, assembling and finishing a quality product while strengthening their understanding of health and safety and quality assurance.	Consolidate and apply previously learned Design & Technology knowledge through a series of focused practical tasks in preparation for the examination.
	Content (What)	This unit develops pupils' confidence and accuracy when working with materials and tools. It reinforces safe workshop practice and introduces a greater focus on precision, quality control and the stages required to produce a successful manufactured product.	This unit reinforces pupils' understanding by connecting theoretical knowledge with practical application. Repeated practice helps pupils strengthen their confidence, accuracy and independence while identifying and addressing areas that require further development.
	Acquire (Knowledge)	• Accurate manufacture requires controlled practical processes, including measuring, marking, cutting, shaping, assembling and finishing materials to produce a functional product. • Safe workshop practice is essential, requiring pupils to select and use tools and equipment appropriately while following relevant health and safety procedures. • Quality assurance ensures products meet expectations, with pupils checking accuracy, finish, function and consistency throughout the manufacturing process.	• Practical application strengthens understanding, enabling pupils to recall and use previously taught knowledge in different contexts. • Successful practical work requires accurate processes and safe working practices, with pupils selecting appropriate tools, materials and techniques. • Exam preparation requires retrieval and application, allowing pupils to identify gaps in knowledge and improve their ability to solve practical and design problems.
	Apply (Skills)	Independently measure, mark, cut, shape, assemble and finish a wooden photo frame using appropriate tools and techniques. Apply health and safety procedures throughout manufacture and use quality assurance checks to identify and correct inaccuracies, producing a functional and accurately finished product.	Apply previously learned knowledge, practical skills and manufacturing processes to a range of exam-style practical tasks, working safely and accurately while using feedback and evaluation to improve performance and prepare effectively for the examination.
Autumn 2	Content (Why)	Develop practical workshop skills through the design and manufacture of a Product . Pupils will build on KS3 knowledge by measuring, marking, cutting, shaping, processing, assembling and finishing a quality product while strengthening their understanding of health and safety and quality assurance.	Consolidate and apply previously learned Design & Technology knowledge through a series of focused practical tasks in preparation for the examination.
	Content (What)	This unit develops pupils' confidence and accuracy when working with materials and tools. It reinforces safe workshop practice and introduces a greater focus on precision, quality control and the stages required to produce a successful manufactured product.	This unit reinforces pupils' understanding by connecting theoretical knowledge with practical application. Repeated practice helps pupils strengthen their confidence, accuracy and independence while identifying and addressing areas that require further development.
	Acquire	• Accurate manufacture requires controlled practical processes, including	• Practical application strengthens understanding, enabling pupils to

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	Apply (Skills)	Independently measure, mark, cut, shape, assemble and finish a wooden photo frame using appropriate tools and techniques. Apply health and safety procedures throughout manufacture and use quality assurance checks to identify and correct inaccuracies, producing a functional and accurately finished product.	Apply previously learned knowledge, practical skills and manufacturing processes to a range of exam-style practical tasks, working safely and accurately while using feedback and evaluation to improve performance and prepare effectively for the examination.
Spring 1	Content (Why)	Develop design communication skills through RO39 NEA: Communicating Designs , building on hand-drawing and CAD skills developed at KS3. Pupils will develop their ability to communicate design ideas clearly and accurately in preparation for the coursework project.	Examination Revision
	Content (What)	This unit develops pupils' ability to communicate ideas using appropriate graphical techniques and digital tools. It prepares pupils for the demands of the NEA by developing accuracy, creativity and confidence in presenting and refining design ideas.	Examination Revision
	Acquire (Knowl edge)	• Effective design communication requires accurate graphical skills, including proportion, perspective, annotation, rendering and appropriate use of drawing conventions. • Hand-drawn and CAD techniques communicate different aspects of a design, with pupils selecting appropriate methods to clearly represent ideas, dimensions, materials and construction. • Successful design communication requires clarity and refinement, enabling others to understand the intended product and how it could be manufactured.	Examination Revision
	Apply (Skills)	Use hand-drawing and CAD techniques to develop, annotate and communicate design ideas clearly and accurately. Select appropriate graphical methods to present design development and demonstrate how ideas can be manufactured, building towards the NEA coursework project.	Examination Revision
Spring 2	Content (Why)	Develop design communication skills through RO39 NEA: Communicating Designs , building on hand-drawing and CAD skills developed at KS3. Pupils will develop their ability to	Examination Revision

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		communicate design ideas clearly and accurately in preparation for the coursework project.	
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	Apply (Skills)	Use hand-drawing and CAD techniques to develop, annotate and communicate design ideas clearly and accurately. Select appropriate graphical methods to present design development and demonstrate how ideas can be manufactured, building towards the NEA coursework project.	Examination Revision
Summer 1	Content (Why)	Complete RO40: Design, Evaluation and Modelling , building on hand-sketching and CAD skills developed in the spring term. Pupils will independently plan, develop and manufacture a high-quality prototype product using appropriate design and modelling techniques.	Examination Revision
	Content (What)	This unit develops pupils' ability to take a design idea from concept through to a functional prototype. It strengthens independence, precision and problem-solving while preparing pupils to evaluate and refine their designs against user needs and design requirements.	Examination Revision
	Acquire (Knowledge)	• Effective design development requires accurate sketching and CAD skills, enabling pupils to communicate and refine ideas using appropriate industrial-standard conventions. • Successful prototyping requires careful planning and accurate manufacture, including appropriate selection of materials, tools, processes and manufacturing techniques. • Evaluation drives design improvement, with pupils testing prototypes against the design brief, user requirements and performance criteria before identifying realistic refinements. •	Examination Revision

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	Apply (Skills)	Independently develop and communicate design ideas using hand sketches and CAD, plan and manufacture a quality prototype, and evaluate its performance against the design requirements. Use testing and feedback to identify improvements and refine the design, demonstrating increasing independence throughout the design and manufacturing process.	Examination Revision
Summer 2	Content (Why)	Complete RO40: Design, Evaluation and Modelling , building on hand-sketching and CAD skills developed in the spring term. Pupils will independently plan, develop and manufacture a high-quality prototype product using appropriate design and modelling techniques.	Examination Revision
	Content (What)	This unit develops pupils' ability to take a design idea from concept through to a functional prototype. It strengthens independence, precision and problem-solving while preparing pupils to evaluate and refine their designs against user needs and design requirements.	Examination Revision
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