



Intent for the Year 11 Engineering Studies Curriculum 2021-2022

'All children will experience a well-balanced and comprehensive curriculum that enhances informed, intellectual, developmental and moral character. As a result, this will improve life chances, inter-personal relationships, social mobility and preparedness for employment. Our curriculum will encourage everyone to have a positive impact on society.'

We feel that the WJEC Level 1/2 Awards in Engineering offers a learning experience that focuses learning for 14-16 year olds through applied learning, i.e. acquiring and applying knowledge, skills and understanding through purposeful tasks set in sector or subject contexts that have many of the characteristics of real work that the GCSE version lacks for our students. The applied purpose is the vehicle through which the learning contained in the unit is made relevant and purposeful. It is also the means by which learners are enthused, engaged and motivated to study engineering. The applied purpose provides the opportunity for authentic work related learning, but more than this, it will require learners to consider how the use and application of their learning impacts on individuals, employers, society and the environment. The applied purpose will also enable learners to learn in such a way that they develop:

The qualifications have been devised around the concept of a 'plan, do, review' approach to learning where learners are introduced to a context for learning, review previous learning to plan activities, carry out activities and review outcomes and learning. This approach mirrors engineering production and design processes and also provides for learning in a range of contexts thus enabling learners to apply and extend their learning.

The qualification provides learners with a broad appreciation of work in engineering related industries and wider opportunities for progression into further education, employment or training. The qualification has been designed to build on the skills, knowledge and understanding acquired at Key Stage 3, particularly skills related to literacy, numeracy, use of technology and design. These are just some of the reasons why I believe that this course is best suited to our students.

Implementation:

Students are covering the WJEC Vocational Engineering Studies course Level 1 & 2 Students receive 3 one hour lessons over a week. Time is split between workshop, ICT suite and classroom.

Curriculum adaptations as a result of the pandemic:

introduction to a range of practical and technical skills associated with the vocational qualification specification. Revisit theory sections in no particular order - awaiting to hear from the Exam board what adaptations will occur as a result of what's happened. getting students ready for Exam early.



Term	Enquiry/Topic/Unit: <i>What is going to be taught?</i>	Key Outcomes: <i>What will students have achieved by completing this scheme of learning?</i>	Character Education: <i>How does this topic link to a sense of Self, Others and the World, in terms of Character Education?</i>	Assessment: <i>Will there be formative and/or summative testing? What role will interleaving play? How will this be marked?</i>	Vocabulary: <i>What are the key words for this topic/unit that students must know?</i>	Home-Learning: <i>What homework will be set and why (e.g. consolidate/extend)? How will this be marked?</i>
1a	<p>Continuation of UNIT 1 ASSESSMENT TASK (may not be required) completion of outstanding work due to student isolation</p> <p>Students must know how engineered products meet requirements Identify features that contribute to the primary function of engineered products: Identify features of engineered products that meet requirements of a brief: Describe how engineered products function Students must be able to propose design solutions Develop creative ideas for engineered products</p>	<p>Student may require further time to complete activities due to work experience and other commitments which prevented them from finishing on time in year 10 – if this time is not required students will begin Unit 2 coursework as normal</p>	<p>Enquiry based learning provides a vehicle to developing a sense of the world and their responsibility within it. 6 character traits can be extracted through their work in year 10</p> <p>Being resilient to cope with difficult engineering problems which require to be solved</p> <p>being responsible to cope with the demand of the course and to be safe and</p>	<p>The aim of the summative assessment is to help us to know our students better, to assess their potential and improve performance.</p> <p>The implementation of well thought out and careful written summative assessment which are directly linked to the departmental schemes of work and PLC's in order to allow for an effective analysis of students strengths and weaknesses.</p> <p>Formative assessment is integral to everyday teaching - within each student' Tool box' is a tool to build confidence, and reduce anxiety and it is</p>		



<p>Evaluate options for design solutions: Produce design specifications:</p> <p>Practical tasks will be placed here to encourage confidence, reduce anxiety of application when selecting materials</p> <p>FPT will be implemented to reduce cognitive load and gain new skills required for assessment</p> <p>Main Focus UNIT 2 ASSESSMENT TASK</p> <p>Machining based 'making' task.</p> <p>Refer to 'Section 9' in handouts</p> <p>Students will complete their second assessment task. They will complete a 'make' based task in the workshop demonstrating their learnt knowledge using hand-tools, machinery and mathematical skills. Approximately 9 processes must be evident in their task. Engineering drawings will be supplied.</p>	<p>Students will assess, interpret, analysis and plan their own practical to manufacture their desk light.</p> <p>Students have to rely on their planning skills, existing knowledge of tools and processes and be able to use and read data, risk assessments, cutting and drilling speeds from the information given to them.</p>	<p>being confident to deliver and make decisions when manufacturing and planning their final project</p> <p>being reflective when having to revise and evaluate their coursework</p>	<p>embedded into teaching activities within each lesson. Via the use of formative assessment approaches, low stake testing and retrieval practice techniques , our aim is to be the best prepared to help our students embed and use knowledge fluently to improve long term knowledge retention.</p>		
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<p>1b</p>	<ul style="list-style-type: none"> • Student must be able to interpret engineering information • Interpret engineering drawings • Interpret engineering information • Identify resources required • Sequence required activities • Student must be able to use engineering equipment • Use tools in production of engineering products • Use equipment in production of engineering products • Students must be able to use engineering processes & forming processes • Use engineering processes in production of engineered products: • Describe applications of engineering processes 	<p>Students will assess, interpret, analysis and plan their own practical to manufacture their desk light.</p> <p>Students have to rely on their planning skills, existing knowledge of tools and processes and be able to use and read data, risk assessments, cutting and drilling speeds from the information given to them.</p>	<p>Enquiry based learning provides a vehicle to developing a sense of the world and their responsibility within it.</p> <p>Many of the 9 character traits can be extracted through their work in year 10</p> <p>All student aim to be curious as they have all chosen the subject to study and want to find out more.</p>	<p>Unit 2 Controlled assessment 2 Portfolio of evidence – analysis, planning pages and manufactured product completed in exam conditions</p> <p>Internally assessed</p>	<ul style="list-style-type: none"> • Marking out • Cutting • Finishing • Preparing • Shaping • Drilling • Turning • Brazing • Joining • Filing • Soldering <p>Requirements</p> <ul style="list-style-type: none"> • Aesthetic • Environment (where used) • User/customer/client • Cost • Safety • Ergonomics • Size • Limits <p>Sustainability</p>	<p>Preparation planning for manufacturing – understanding processes, tools and equipment</p> <p>Lathe parts</p> <p>Pillar drill parts</p>



	<ul style="list-style-type: none"> Evaluate quality of engineered products 					
2a	<ul style="list-style-type: none"> Student must be able to interpret engineering information Interpret engineering drawings Interpret engineering information Identify resources required Sequence required activities Student must be able to use engineering equipment Use tools in production of engineering products Use equipment in production of engineering products Students must be able to use engineering processes & forming processes Use engineering processes in production of engineered products: Describe applications of engineering processes 	<p>Under supervision student will use a range of tools and equipment independently to manufacture their parts to a specific tolerance in accuracy.</p>	<p>Being resilient to cope with difficult engineering problems which require to be solved</p> <p>being responsible to cope with the demand of the course and to be safe and</p> <p>being confident to deliver and make decisions when manufacturing and planning their final project</p> <p>being reflective when having to revise and evaluate their coursework</p>			<ul style="list-style-type: none"> Structural, e.g. buildings, bridges Mechanical, e.g. gearbox, crane, bicycle Electronic, e.g. mobile phone, communications, alarm <p>Properties</p> <ul style="list-style-type: none"> Tensile strength Hardness Toughness Malleability Ductility Conductivity Corrosive resistance Environment al degradation Elasticity Destructive tests



	<ul style="list-style-type: none"> Evaluate quality of engineered products 				<ul style="list-style-type: none"> Non-destructive tests Materials <ul style="list-style-type: none"> Ferrous Non-ferrous Thermoplastics Thermosetting plastics Smart Composite 	
2b	<ul style="list-style-type: none"> Student must be able to interpret engineering information Interpret engineering drawings Interpret engineering information Identify resources required Sequence required activities Student must be able to use engineering equipment Use tools in production of engineering products 	<p>Under supervision students will use a range of tools and equipment independently to manufacture their parts to a specific tolerance in accuracy.</p> <p>Again building upon knowledge in year 10 students will widen their knowledge of material and properties by linking them to the role that they have to play when used in machines and products.</p> <p>Part of the course focus is on building products and having</p>	<p>Being resilient to cope with difficult engineering problems which require to be solved in an exam</p> <p>being responsible to cope with the demand of the course such as revising and answering questions which are set for homework</p> <p>being confident to deliver and make decisions when manufacturing and</p>			



	<ul style="list-style-type: none"> • Use equipment in production of engineering products • Students must be able to use engineering processes & forming processes • Use engineering processes in production of engineered products: • Describe applications of engineering processes • Evaluate quality of engineered products 	<p>an understanding for the range of drawings produced from basic oblique, to isometric, assembly and orthographic projections. Students will be able to interpret, identify, use and design their own drawings to support future projects. Activities involve interleaving throughout the course to build confidence and understanding</p>	<p>planning their final project</p>			
<p>3a</p>	<p>Students will sit the Unit 3 assessment Task (External Exam). This is the second opportunity for the students to attempt the exam. By this stage of the course students will have covered all of the theory elements of the course. Further revision sessions can be completed at the teacher's discretion. Students must understand properties of engineering materials</p>		<p>Being resilient to cope with difficult engineering problems which require to be solved in an exam</p> <p>being responsible to cope with the demand of the course such as revising and answering questions which are set for homework</p>			



	<ul style="list-style-type: none"> Describe properties required of materials for engineering products Explain how materials are tested for properties Select materials for a purpose: <p>Convert between isometric sketches and 3rd angle orthographic projections</p> <p>Preparation for the Exam</p> <p>Understand effects of engineering achievements</p> <p>understand properties of engineering materials</p> <p>know forming processes of engineering materials</p> <p>be able to solve engineering problems</p>		<p>being confident to deliver and make decisions when manufacturing and planning their final project</p>			
<p>3b</p>	<p>Students will sit the Unit 3 assessment Task (External Exam). This is the second opportunity for the students to attempt the exam. By this stage of the course students will have covered the majority of the theory element of the</p>		<p>Being resilient to cope with difficult engineering problems which require to be solved in an exam</p> <p>being responsible to cope with the demand of the course such as</p>			



	<p>course. Further revision sessions can be completed at the teacher's discretion.</p>		<p>revising and answering questions which are set for homework</p> <p>being confident to deliver and make decisions when manufacturing and planning their final project</p>			
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Impact: *Students will have completed the 2 year course with knowledge of a level 2 vocational styled qualification. Students can now interpret, analysis, plan, follow their plan, reflect, adapt to situations which fall outside their expectations and make the necessary adjustments to correct their mistakes/inaccuracies*

Manufacture to a set tolerance to create a product to standard.

Students have the opportunity to improve the Exam in year 11 which could mean an improved overall outcome.

This scheme of learning allows learners to develop a bigger picture of the outside world of Engineering and provides a platform for their future career paths.

Students will also gain knowledge and interest to take them further in education whether it be apprentices or college or university.