

KS5 ENGINEERING CURRICULUM MAP

Intent: We transform lives through learning by inspiring the next generation of designers and engineers to be independent creative problem solvers.

Implementation: The Engineering and Design Technology curriculum aims to empower students with the knowledge and ability to solve problems by applying their practical, mathematics and creative skills to a variety of real-life problems.

We place a real emphasis on teaching Engineering from a first principles basis, we want our students to question why they are doing what they do, to really understand the principles and in turn gain a much deeper understanding and knowledge of the processes involved. We also aim for our students to develop an appreciation of the beauty and power of design technology, and a sense of enjoyment and curiosity for the subject. We have a fundamental belief that all students can succeed in DT and Engineering and this is achieved through the process of intelligent practice and effective curriculum sequencing.

Year/Term	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 12 BTEC	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students beginning assignment C: Practical</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Extended Diploma students begin assignment A:Businesses</p> <p>5: Extended Diploma begin assignment A: research</p>	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students completing assignment C: Using engineering processes and working in team Practical</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Diploma and Extended Dip students complete assignment A: Business functions and trade</p>	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students beginning assignment B: CAD</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Diploma and Extended Diploma students begin assignment B:Analysis</p> <p>5: Diploma & Extended Diploma begin assignment B: manufacture</p>	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students completing assignment B: 2D CAD Drawings</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Diploma & Extended Diploma students complete assignment B: Costing Methods</p> <p>5: Diploma & Extended Diploma complete assignment B:</p>	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students beginning assignment A: Engineering processes and human factors</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Diploma & Extended Diploma students begin assignment C: Engineering organisations</p>	<p>BTEC Units:</p> <p>1: All students preparing for external exam</p> <p>2: All Students beginning assignment A: Engineering processes and human factors</p> <p>3: Diploma and Extended Students preparing for external exam</p> <p>4: Diploma & Extended Diploma students complete assignment C: Engineering organisations</p>

	<p>16: Extended Diploma begin assignment A: National Grid</p> <p>25: Extended Diploma begin assignment A: Identification of Materials</p>	<p>5: Diploma and Extended Diploma complete assignment A: Research Investigation</p> <p>16: Extended Diploma complete assignment A: National Grid</p> <p>25: Extended Diploma complete assignment A: Identification of Materials</p>	<p>16: Extended Diploma begin assignment B: Power Circuitis</p> <p>25: Extended Diploma begin assignment B: Testing Materials</p>	<p>Development of design solution</p> <p>16: Extended Diploma complete assignment B: Power Circuitis</p> <p>25: Extended Diploma complete assignment B: Testing Materials</p>	<p>and their use of quality systems and value management</p> <p>5: Diploma & Extended Diploma begin assignment C: Manufacture of Solution</p> <p>16: Extended Diploma begin assignment C: Costings</p> <p>25: Extended Diploma begin assignment C: Evaluating Materials</p>	<p>and their use of quality systems and value management</p> <p>5: Diploma & Extended Diploma complete assignment C: Manufacture of Solution</p> <p>16: Extended Diploma complete assignment C: Costings</p> <p>25: Extended Diploma completing assignment C: Evaluating Materials</p>
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Year/Term	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 13 BTEC	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students begin assignment A: Differential calculus A chance to cover some of the missing knowledge from the unit 1 exam.</p> <p>8: Diploma & Extended Diploma students begin assignment A: Sequences & Series A chance to cover some of the missing knowledge from the unit 1 exam.</p> <p>19: Diploma & Extended Diploma Students begin assignment A:</p>	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students complete assignment A: Differential calculus A chance to cover some of the missing knowledge from the unit 1 exam.</p> <p>8: Diploma & Extended Diploma students complete assignment A: Sequences & Series A chance to cover some of the missing knowledge from the unit 1 exam.</p> <p>19: Diploma & Extended Diploma Students complete assignment A: Analogue devices & circuits</p>	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students begin topic for LOB: Integral calculus</p> <p>8: Diploma & Extended Diploma students begin & complete internal exam for LOB: Matrices & Determinants</p> <p>19: Diploma & Extended Diploma Students begin assignment B: Digital logic devices & circuits</p> <p>22: Extended Diploma Students begin assignment B: Computer Simulation of electronic circuits</p> <p>26: Diploma & Extended Diploma Students begin</p>	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students complete internal exam for LOB: Integral calculus</p> <p>8: Diploma & Extended Diploma students begin & complete internal exam for LOC: Complex numbers</p> <p>19: Diploma & Extended Diploma Students complete assignment B: Digital logic devices & circuits</p> <p>22: Extended Diploma Students complete assignment B: Computer Simulation of electronic circuits</p> <p>26: Diploma & Extended Diploma</p>	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students begin assignment C: Application of calculus</p> <p>8: Diploma & Extended Diploma students begin assignment D: Statistical & probability techniques</p> <p>19: Diploma & Extended Diploma Students begin assignment C: Review of analogue & digital electronic circuits</p> <p>22: Extended Diploma Students begin assignment C&D: Develop and review a PCB</p> <p>26: Diploma & Extended Diploma</p>	<p>BTEC Units:</p> <p>3: Certificate Students preparing for external exam</p> <p>6: Extended Diploma Prepare for external exams</p> <p>7: Diploma & Extended Diploma Students begin assignment C: Application of calculus</p> <p>8: Diploma & Extended Diploma students complete assignment D: Statistical & probability techniques</p> <p>19: Diploma & Extended Diploma Students complete assignment C: Review of analogue & digital electronic circuits</p> <p>22: Extended Diploma Students complete assignment C&D: Develop and review a PCB</p> <p>26: Diploma & Extended Diploma</p>

	<p>Analogue devices & circuits. A chance to cover some of the missing knowledge from the unit 1 exam.</p> <p>22: Extended Diploma Students begin assignment A: Design & manufacture of PCBs</p> <p>26: Diploma & Extended Diploma Students begin assignment A: Structures of non-metallic materials. A chance to cover some of the knowledge that may have been missing from the incomplete unit 25.</p> <p>35: All Students begin & complete assignment A: Software Methodologies</p> <p>41: Extended Diploma Students begin assignment A: Technology & characteristics of secondary machining processes</p>	<p>22: Extended Diploma Students complete assignment A: Design & manufacture of PCBs</p> <p>26: Diploma & Extended Diploma Students complete assignment A: Structures of non-metallic materials</p> <p>35: All Students begin LO B&C: Design and development of software programs</p> <p>41: Extended Diploma Students complete assignment A: Technology & characteristics of secondary machining processes</p>	<p>assignment B: Mechanical properties of non-metallic materials</p> <p>35: All Students continue assignment for LOB&C: Design & development of software programs</p> <p>41: Extended Diploma Students begin assignment for LO B&C: Setup and carry out secondary machining processes</p>	<p>Students complete assignment B: Mechanical properties of non-metallic materials</p> <p>35: All Students continue on LOB&C: Design & development of software programs</p> <p>41: Extended Diploma Students continue assignment for LO B&C: Setup and carry out secondary machining processes</p>	<p>Students begin assignment C: In-service failure of non-metallic components</p> <p>35: All Students complete assignment for LOB&C: Design & development of software programs</p> <p>41: Extended Diploma Students complete assignment for LO B&C: Setup and carry out secondary machining processes</p>	<p>Students complete assignment C: In-service failure of non-metallic components</p> <p>35: All Students begin and complete assignment for LOD: Review of development of a software program</p> <p>41: Extended Diploma Students begin and complete assignment for LOD: Review secondary machining processes</p>
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Impact: To ensure that all students make good progress, students are continually assessed. At KS4 these assessments will feed into the tracker and teaching and interventions will be adapted accordingly. Key vocabulary will be taught and assessed through knowledge organisers. At KS4 there is a much stronger focus on assessing the practical aspects of Engineering and Design Technology preparing the students for their external exams. Progress is tracked through central records and classroom teachers will adapt teaching accordingly. Pupil engagement in homework and intervention is also closely monitored and all parents/guardians are kept up to date through regular contact. Through the curriculum we aim to develop student's appreciation of engineering processes, and a sense of enjoyment and curiosity for the subject. The success of this will be monitored at the end of Year 10 with the external exams. Keystage 5 students make up the majority of the school and they study one of three different routes through the department. Either the Extended Diploma, a Diploma or the Extended Certificate. All students are successful on one of these three routes completing their course over the two years and ensuring they either go on to further study, undertake an apprenticeship or start work.