

# Key Stage 5 Engineering

## Year 13 Engineering Curriculum Information



	Key Question:	Specification:	Skill Focus: (AO)
<b>Term 1:</b>	<p><b>Unit 4:</b> How to explore commercial engineering and business activities such as cost control, quality systems, and value management.</p> <p><b>Unit 5:</b> How learners will apply project-management principles to undertake a 30 – hour individual project that will produce a product, system or process relevant to their specialist area of study.</p>	<p><b>Unit 3:</b> Engineering Product Design and Manufacture. <b>External Assessment.</b></p> <p><b>Unit 4:</b> Applied Commercial and Quality Principles in Engineering. <b>Internal Assessment.</b></p> <p><b>Unit 5:</b> A Specialist Engineering Project. <b>Internal Assessment.</b></p> <p><b>Unit 24:</b> Maintenance of Mechanical Systems. <b>Internal Assessment</b></p> <p><b>Unit 39:</b> Modern Manufacturing Systems. <b>Internal Assessment.</b></p>	<p><b>Unit 3 Learning Aim</b> <b>A:</b> Design triggers, challenges, constraints and opportunities, and materials and processes. <b>B:</b> Interpreting a brief into operational requirements and analysing existing products</p> <p><b>Unit 4 learning Aim</b> <b>A:</b> Examine business functions and trade considerations that help engineering organisations thrive. <b>B:</b> Explore activity-based costing as a method to control costs and to determine if an engineering product or service is profitable.</p> <p><b>Unit 5 Learning Aim</b> <b>A:</b> Investigate an engineering project in a relevant specialist area. <b>B:</b> Develop project-management processes and a design solution for the specialist engineering project as undertaken in industry.</p> <p><b>Unit 24 Learning Aim</b> <b>A:</b> Examine the characteristics of lubricants and their application in mechanical systems. <b>B:</b> Investigate the characteristics and applications of common consumable components used in mechanical systems.</p> <p><b>Unit 39 Learning Aim</b> <b>A:</b> Understanding the functions of manufacturing operations and factors influencing their success. <b>B:</b> Examine process systems that are commonly used in the manufacturing industry.</p>
<b>Term 2:</b>	<p><b>Unit 24:</b> How to explore the processes and components associated with the maintenance of mechanical systems.</p> <p><b>Unit 39:</b> How to investigate the principles of processing systems used in manufacturing and how operations are organised to make the most efficient use of time, materials and equipment.</p>	<p><b>Unit 3:</b> Engineering Product Design and Manufacture. <b>External Assessment.</b></p> <p><b>Unit 4:</b> Applied Commercial and Quality Principles in Engineering. <b>Internal Assessment.</b></p> <p><b>Unit 5:</b> A Specialist Engineering Project. <b>Internal Assessment.</b></p> <p><b>Unit 24:</b> Maintenance of Mechanical Systems. <b>Internal Assessment</b></p> <p><b>Unit 39:</b> Modern Manufacturing Systems. <b>Internal Assessment.</b></p>	<p><b>Unit 3 Learning Aim</b> <b>C:</b> Using an iterative process to design ideas and develop a modified product proposal. <b>D:</b> Technical justification and validation of the design solution.</p> <p><b>Unit 4 learning Aim</b> <b>C:</b> Explore how engineering organisations use quality systems and value management to create value.</p> <p><b>Unit 5 Learning Aim</b> <b>C:</b> Undertake the solution for a specialist engineering project and present the solution as undertaken in industry.</p> <p><b>Unit 24 Learning Aim</b> <b>C:</b> Investigate the operation and application of power transmissions components used in mechanical systems.</p> <p><b>Unit 39 Learning Aim</b> <b>C:</b> Investigate the principles of Lean manufacturing and how these influence productivity.</p>



<b>Term 3:</b>	<b>Unit 3:</b> How to explore engineering product design and complete activities that consider function, sustainability, materials and form.	<b>Unit 3: Engineering Product Design and Manufacture. External Assessment.</b>	<b>Exam preparation</b>  <b>Unit 3 Learning Aims</b>  <b>A1:</b> Design triggers.. <b>A2:</b> Design challenges. <b>A3:</b> Equipment level and system level constraints. <b>A4:</b> Material properties. <b>A5:</b> Mechanical power transmission. <b>A6:</b> Manufacturing processes.  <b>B1:</b> Design for a customer. <b>B2:</b> Regulatory constraints and opportunities. <b>B3:</b> Market Analysis. <b>B4:</b> performance analysis. <b>B5:</b> Manufacturing analysis.  <b>C1:</b> Design Proposals. <b>C2:</b> Communicating designs. <b>C3:</b> Iterative development process.  <b>D1:</b> Statistical methods. <b>D2:</b> Validating designs.
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## Year 13 Engineering Assessment Information

Assessment	Time/Venue	What will be assessed?
Assessment 1:	20 Guided learning hours per Unit, per Learning Aim- Classroom. (160 guided learning hours total assessment time)	Full formal assessment of official internal assignment briefs for Units 4, 5, 24 and 39 (Assessment will be based on learning aims A and B, assignment briefs 1 and 2).
Assessment 2:	20 Guided learning hours per Unit, per Learning Aim- Classroom. (80 guided learning hours total assessment time)	Full formal assessment of official internal assignment briefs for Units 4, 5, 24 and 39 (Assessment will be based on learning aim C, assignment brief 3).
Assessment 3: Mock Examination	2 Hours – Exam Venue	A mock paper based on the external unit 3 exam.

