



# St Joseph's College Subject Curriculum Map: ENGINEERING

## Curriculum Intent

With the objective to give students a broad range of knowledge and abilities, Engineering focuses on the development of critical thinking, practical skills, and the application of technological and mathematical concepts to handle technical and design challenges. The depth of the disciplines and body of information that make up Engineering offers countless chances for a range of higher education and professional prospects. This course helps students become ready for the future and take the next step towards an Engineering education and professional journey. Students are motivated via peer-to-peer discussions to stimulate deeper analytical thinking. Guest speakers and former students (both on University and Apprentice pathways) will talk about their interest in different engineering aspects. This certification offers a comprehensive foundation for further study within the engineering field.

Year Group	Autumn Term		Spring Term		Summer Term		
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6	
Key Stage 5	12	<p><b>Unit 2: Delivery safely of engineering</b> Learners explore how processes are undertaken by teams to create engineered products or to deliver engineering services safely.</p> <p><b>Unit 10: Computer Aided Design and Engineering</b> Learners develop two-dimensional (2D) detailed drawings and three-dimensional (3D) models using a computer-aided design (CAD) system.</p>	<p><b>Unit 2: Delivery safely of engineering</b> Learners explore how processes are undertaken by teams to create engineered products or to deliver engineering services safely.</p> <p><b>Unit 10: Computer Aided Design and Engineering</b> Learners develop two-dimensional (2D) detailed drawings and three-dimensional (3D) models using a computer-aided design (CAD) system.</p> <p><b>Unit 3: Product Design &amp; Manufacture</b> Learners will explore engineering product design and manufacturing processes and will complete activities that consider function, sustainability, materials, form and other factors.</p>	<p><b>Unit 10: Computer Aided Design and Engineering</b> Learners develop two-dimensional (2D) detailed drawings and three-dimensional (3D) models using a computer-aided design (CAD) system.</p> <p><b>Unit 5: Specialist Engineering Project</b> Learners apply project-management principles to undertake a 30-hour individual project and will produce a product, system, or process relevant to their specialist area of study.</p>	<p><b>Unit 44: Fabrication Manufacturing Process</b> Learners explore and carry out fabrication processes to safely manufacture products from sheet metal.</p> <p><b>Unit 5: Specialist Engineering Project</b> Learners apply project-management principles to undertake a 30-hour individual project and will produce a product, system, or process relevant to their specialist area of study.</p>	<p><b>Unit 44: Fabrication Manufacturing Process</b> Learners explore and carry out fabrication processes to safely manufacture products from sheet metal.</p> <p><b>Unit 18 Electrical power generation, transmission, and distribution</b> Learners explore the principles and the design of the transmission and distribution infrastructure that supplies electricity to organisations and domestic households.</p>	<p><b>Unit 18 Electrical power generation, transmission, and distribution</b> Learners explore the principles and the design of the transmission and distribution infrastructure that supplies electricity to organisations and domestic households.</p> <p><b>Unit 44: Fabrication Manufacturing Process</b> Learners explore and carry out fabrication processes to safely manufacture products from sheet metal.</p>
	13	<p><b>Unit 6: Micro-Controllers</b> Learners explore how programmable devices and electronic components are developed systematically to form physical systems controlled by computer code.</p>		<p><b>Unit 26: Mechanical Behaviours of non-metallic materials</b> Learners explore the mechanical properties of non-metallic materials (polymers, ceramics and composites),</p>		<p><b>Unit 15: Electrical Machines</b> Learners explore commercial engineering, for example key business activities, cost control, quality systems and value management, which is used by engineering organisations to create value.</p>	

		<p><b>Unit 25 Mechanical behaviour of metallic materials</b>  <i>Learners investigate and conduct tests on the mechanical properties of metals, consider suitable applications and explore failure modes to improve component design.</i></p>	<p><i>consider their suitable applications and explore their component failure modes.</i></p> <p><b>Unit 13: Welding Technology</b>  <i>Learners examine the principles and technology used in common welding processes and produce welded joints in differing materials and welding positions.</i></p>	<p><b>Unit 4: Applied Commercial and Quality Principles in Engineering</b>  <i>Learners explore commercial engineering, for example key business activities, cost control, quality systems and value management, which is used by engineering organisations to create value.</i></p>
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