

Curriculum Overview –

All Saints' Curriculum Intent Statement:

Pupils at All Saints have access to a world class curriculum – one which is broad, balanced, challenging and gives pupils a better chance of success than any other curriculum in the country.

Technology (KS4) Curriculum Intent Statement:

The curriculum is much more than just lessons. It includes the ethos, attitudes and relationships which create the high quality life in all of our schools. Our aim is to provide a broad, balanced and rigorous curriculum that meets the needs and aspirations of every young person and leaves them well prepared for their future.

The curriculum intends:

Prepare students to face the challenges of an ever modernising world. Develop the ability to solve technical problems and use creative and innovative thinking to design and develop products. To be able to assess the effectiveness of a solution and its impact on the environment.

Key Threshold Concepts

- Principles of engineering design
- Communicating designs
- Design, evaluation, modelling

Subject specific Knowledge

- Understand and apply the fundamental principles and concepts of Engineering Design, including the design process, types of drawings, influences on design, and the use of Computer Aided Design (CAD)
- Develop learning and practical skills that can be applied to real-life contexts and work situations
- Think creatively, innovatively, analytically, logically and critically.
- Develop independence and confidence in using skills that would be relevant to the engineering design and development sector and more widely.
- Analyse problems in design terms through practical experience of solving such problems, including designing, and modelling designs to meet a design brief.
- Understand the different stages of the iterative design process, recognising the cyclical nature of this approach.
- Evaluate designs through product disassembly and the process of using product analysis.

Subject specific Skills

- Safely and skilfully use hand tools and machines.
- Work with a wide range of materials including woods, metals, plastics, modelling materials.
- Sketch and more formally draw in 2D and 3D.
- Use Computer Aided Design to produce quality 2D and 3D representations of components.
- Disassemble and reassemble products in order to learn about their construction.
- Create design specifications for new products and components.
- Create quality prototypes for components and products.
- Evaluate their designs and prototypes.

Cross Curricular Knowledge

- Maths – calculating area, circumference, measuring, use of CAD
- Science – Material properties, forces, electronics.
- Geography – considering different cultural needs when designing products. Considering origins of materials and economic of global manufacture. Sustainability.

- Business – Designing products for market, economics, scales of production, client and user requirements, analysing the market.

Year	Cycle 10	Cycle 11		Cycle 12	
Year 10	<p>Introduction to engineering design</p> <p>The design process Iterative and Linear</p> <p>Making from an engineering drawing</p> <p>Prototyping</p> <p>Sketching and drawing techniques</p> <p>R039 Task 1 Communicating design ideas: Freehand sketching of concept Ideas.</p>	<p>Design Development</p> <p>Product analysis: ACCESSFM</p> <p>Evaluating design ideas</p> <p>2D and 3D CAD using 2D Design, Google SketchUp and Fusion 360</p> <p>Engineering assembly and product development task: GreenPower scale model.</p>	<p>R039 Task 2 Presentation/Developed final design proposal</p> <p>R039 Task 3 Introduction to engineering drawings and BS8888.</p> <p>Creation of engineering drawing and assembly drawing for R039 Task 3</p>	<p>R039 Task 4 3D CAD final proposal</p> <p>CAD rendering and presentation of final concept</p>	<p>R038 Exam prep</p> <p>Engineering drawings</p> <p>User centred design</p> <p>R040 Task 1 Market research</p> <p>Product Analysis</p> <p>Identifying strengths and weaknesses of a range of products</p>
	Big ideas: Understanding the role of a design engineer	Big Ideas: Designing techniques, drawing and idea generation	Big ideas: Using Computer Aided Design to develop and present ideas		Big ideas: Investigating the needs and wants of the user. Undertaking product analysis.
	Assessment: R039 Task 1	Assessment: R038 partial practice exam and R039 Task 1 (written, 45 minutes)	Assessment: R039 Task	Assessment: Practice R038 exam (written, 1 hour) R039 Submission	Assessment: Practice R038 exam (written, 1 hour)
Year 11	Cycle 13	Cycle 14			
	<p>R040 Task 3: Product analysis and disassembly.</p> <p>Virtual CAD 3D Model.</p> <p>Physical modelling planning.</p>	<p>R040 Production of prototype</p> <p>Evaluation of prototype.</p> <p>R038 Exam preparation</p>			

	Production of prototype.		
	Big ideas Following engineering drawings Producing high quality prototypes 3D modelling in CAD	Big ideas: Evaluating prototypes Comparing to specification	
	Assessment: Practice R038 exam (written, 75 minutes) R039 completed mark R040 to date assessment	Assessment: R040 Submission Final R038 examination (written, 1 hour)	