



SAINT JOHN WALL CATHOLIC SCHOOL

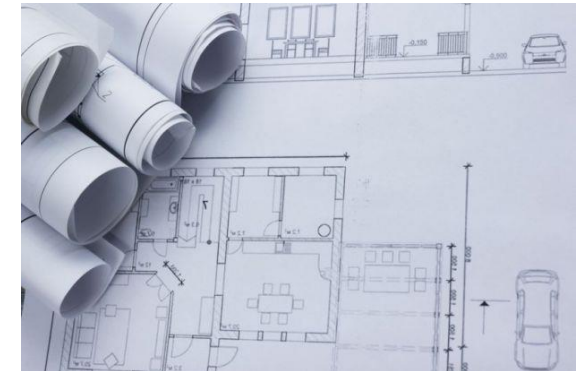
A Catholic School For All



Departmental Schemes of Work

Curriculum Intent: “To educate each and every unique child in our care to hear and respond to what God calls them to be”.

KS4 BTEC Engineering



Ephesians 4:28 Let the thief no longer steal, but rather let him labor, doing honest work with his own hands, so that he may have something to share with anyone in need.

KS4 BTEC Engineering Scheme of Work Overview

Sequencing of topics	Year 9	Year 10	Year 11
	Autumn term 1: Component 1 A2 Autumn term 2: Component 1 B1 Spring term 1: Component 2 A1 Spring term 2: Component 2 B1 Summer term 1: Component 2 C1 Summer term 2: Component 3	Autumn term 1: Component 1 A2 Autumn term 2: Component 1 A2 Spring term 1: Component 1 B1 Spring term 2: Component 1 B1 Summer term 1: Component 2 A1 Summer term 2: Component 2 A1	Autumn term 1 & 2: Component 2 Learning Aim B Spring term 1: Component 2 Learning Aim C- Spring term 2: Component 2 Learning Aim C- Summer term 1&2: Component 3
Links to careers paths- (See Development Homework)	<ul style="list-style-type: none"> ❖ Civil Engineer- https://nationalcareers.service.gov.uk/job-profiles/civil-engineer ❖ Mechanical Engineer- https://www.prospects.ac.uk/job-profiles/mechanical-engineer ❖ CAD Technician - https://nationalcareers.service.gov.uk/job-profiles/cad-technician ❖ Toy Designer- https://www.theartcareerproject.com/become/toy-designer/ ❖ Automotive Engineer- https://www.prospects.ac.uk/job-profiles/automotive-engineer ❖ Construction- https://nationalcareers.service.gov.uk/job-categories/construction-and-trades 		
Calendared assessments	<ul style="list-style-type: none"> ❖ 23rd -27th November 	<ul style="list-style-type: none"> ❖ Autumn Term 2: Learning Aim A and B ❖ 3rd-6th November ❖ Summer Term 2: Learning Aim A and B 	<ul style="list-style-type: none"> ❖ 5th -9th October- Mock 1 ❖ Autumn Term 2: Practical activities- deadline ❖ 24th February- 5th March- Mock 2 ❖ Summer Term 2: Learning Aim A and B- deadline
Personal Development <i>(Cross curricular, Saint John Wall, SMSCV, cultural capital)</i>	<p>We encourage the development of skills, knowledge and understanding that help pupils make sense of their world as an integral part of the school's work. We provide a range of experiences that encourage exploration, observation, problem solving, critical thinking and discussion. Design and technology utilises skilled acquired in Maths, Science, IT, English, RS, in fact most subjects across the curriculum.</p> <p><u>Grateful</u> – For the skills we have been given and the opportunities to use them. <u>Hopeful</u> – That our future needs will be met by our vocational needs <u>Curious</u> – about everything we do, don't be afraid to try new ideas and ask searching questions</p> <p>The teaching of design and technology offers opportunities to support the social development of our pupils through the way we expect them to work with each other in lessons. Our groupings allow pupils to work together, and give them the chance to discuss their ideas and feelings about their own work and the work of others. Through their collaborative and cooperative work across a range of activities and experiences in design and technology, the pupils develop respect for the abilities of other pupils, and a better understanding of themselves. They discover the work of established engineers across a diverse range of back grounds and cultures to inspire pupils to have high aspirations in their path beyond Saint John Wall.</p>		

Engineering prepares pupils to take part in the development of tomorrow's rapidly changing world through a **career path focused approach to learning**. Creative thinking encourages pupils to make positive changes to their quality of life building on their **cultural capital** through the research explored. The subject encourages pupils to become autonomous and creative problem- solvers, both as individuals and as part of a team. It enables them to **identify needs of others** and opportunities and to respond by developing ideas, and eventually making products and systems.

Progression model

What **knowledge** will pupils develop? *(Including key terminology)*

Component 1: Exploring Engineering Sectors and Design
 Applications
In Learning aims

- ❖ A: students will learn about the engineering industry, its organisation and interconnections, and the integration of skills within the different industry sectors. Students will consider the types of engineered product from various engineering industries, with a focus on the need to combining the skills available within different sectors to find efficient and cost-effective solutions to everyday problems
- ❖ B: requires the students to produce a design proposal for an engineered product to meet the requirements of a customer brief. Student evidence for these assessments could include a logbook or diary, design sketches, CAD drawings, design proposal notes, photographs, observation records and teacher/peer feedback forms.

Component 2: Investigating an Engineering Project
Learning aims

- ❖ A: Understand materials, components and processes for a given engineered product

What **skills** will pupils develop? *(Including literacy & Numeracy)*

- Different engineering sectors relating to a product.
- Learn how organisations function, large, medium and small enterprises.
- Progression within a company
- Apprenticeships
- Different drawing skills
- Design proposals
- Specifications and how to design to a specification.
- How to develop practical skills using hand tool and machine tools to a high standard.

Skills focused on.

- **Practical skills**
- **Machine tools**
- **Drawing skills**
- **Product analysis**
- **CAD design**
- **CAM manufacturing**
- **Peer analysis**
- **Product design**
- **Analysis**

Component 2: Investigating an Engineering Project
 A1 Materials
 A2 Components
 A3 Processes

- ❖ B: Investigate a given engineered product using disassembly techniques
- ❖ C: Plan the manufacture of and safely reproduce/inspect/test a given engineered component.

Component 3: Responding to an Engineering Brief

Assessment objectives AO1 Understand how to respond to an engineering brief AO2 Select skills and techniques in response to an engineering brief AO3 Apply skills and techniques in response to an engineering brief AO4 Evaluate and review the outcomes of the application of skills and techniques in response to an engineering brief

- B1 Practical engineering skills
- B2 Disassembly techniques
- B3 Product design specification (PDS)
- C1 Engineering make process
- C2 Develop a production plan

Component 3: Responding to an Engineering Brief

- A1 Carry out a process
- A2 Recording the process
- A3 Interpretation of data
- B1 Interpretation of a given brief for an engineered product
- B2 Redesign
- B3 Evaluation
- C1 Analysing engineering information associated with the problem
- C2 Selecting a solution
- C3 Problem solution

Development homework

CAD drawing is an important part of the course, Tinkercad is an online drawing tool. You can access it by logging on to Tinkercad.com. Create an account and work your way through the tutorials. When all tutorials have been completed skills and understanding will enable students to create and design 3D modelling using CAD.

Careers development homework see 'Homework and Exams' section of the school website:

- ❖ Civil Engineer
- ❖ Mechanical Engineer
- ❖ CAD Technician