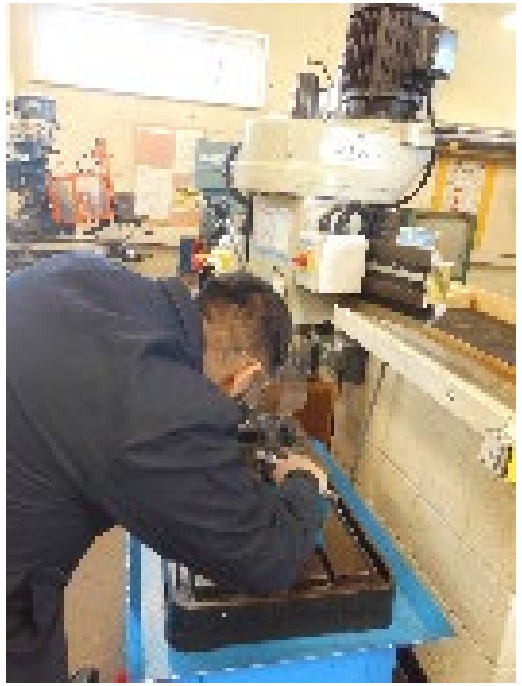
THE WARREN SCHOOL

YEAR 12 VIRTUAL OPEN EVENING

BTEC Engineering



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Welcome

The Level 3 Extended National Diploma in Engineering is a popular course which provides students the opportunity to pursue a qualification that is equivalent to 3 ‘A’ level qualifications. Students choosing this course typically will have studied either Engineering at KS4, or Design Technology as it offers a good progression route. However, we get a number of students each year opting for this who have studied neither before and they adapt very quickly. Students must have a good aptitude for Maths and Physics as these will be underpin much of the work that will be covered. An ability to communicate effectively through written work is also essential as there are a number of units that are assessed via written assignment work. The hard work of the students is reflected in the high number of Distinction and Distinction* grades that are awarded every year helping them to achieve their career goals, whether it is a Higher Apprenticeship or University course.

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BTEC Engineering

KS5 - Year 12 Course Content

Units covered in Year 12

Unit 1 – Engineering Principles - exam*

- Investigate engineering materials; types, use and their properties.
- Learn about and apply the scientific and mathematical principles that underpin engineering.
- Practical tasks as well as theory

Unit 2 – Delivery of Engineering processes – coursework *

- Investigate the processes used to manufacture a product. Use CAD to design a product, which you then manufacture.

Unit 3 – Engineering Product Design – practical exam *

- Explore engineering product design and manufacturing processes and complete activities that consider function, sustainability, materials, form and other factors.

Unit 10 Computer Aided Design – coursework

- Develop two-dimensional (2D) detailed drawings and three-dimensional (3D) models using a computer-aided design (CAD) system.

Unit 7 - Calculus to solve Engineering Problems - coursework

- Applying the principles of calculus to solve engineering problems

Unit 30 - Mechanical measurement and inspection technology - coursework

- How do engineers ensure manufactured item accurate?

The course comprises of a 6 units that you will complete in Year 12 which provide a good overview of many aspects of Engineering. Most of the Units are assessed by assignment work except Unit 1 and 3. These are externally set exams; to pass the course, you must gain at least a Pass grade in these units. There is a range of theoretical and practical work covered.

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KS5 - Year 13 Course Content

Units covered in Year 13

Unit 4 – Applied commercial and quality principles – coursework*
- Explore commercial engineering, for example key business activities, cost control, quality systems and value management, which is used by engineering organisations to create value.

Unit 5 – Engineering project – coursework*
- Apply your project management skills to develop and manufacture a product.

Unit 6 – Micro-controller technology - practical exam*
- Designing a micro-controller system to meet a brief set by the exam board

Unit 18 – Electrical power distribution and transmission – coursework
- Explore the principles and the design of the transmission and distribution infrastructure that supplies electricity to organisations and domestic households.

Unit 24 – Maintenance of mechanical systems – coursework
- Understand and apply the processes and components associated with the maintenance of mechanical systems.

Unit 41 – Manufacturing secondary machining processes – coursework
- Carry out secondary machining processes to manufacture shapes by the safe removal of material.

Unit 42 – Manufacturing primary forming processes – coursework
- Explore some of the primary forming processes found in engineering that are used to make a range of different components.

Unit 22 - Electronic PCB design and manufacture - coursework
- Using various techniques to design and manufacture PCB's

A further 8 units are completed in Year 13 to make up the full Triple award qualification. There is only one exam in Year 13; a practical exam programming a micro-controller to solve a problem set by the exam board. There is also an opportunity for students to resit the exams from Year 12 to improve their grade

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KS5 – Destinations

The hard work of our students not only results in fantastic results, but also opens up a huge range of opportunities for them. Students typically continue into a career in Engineering, however some choose to use the array of transferable skills that the have developed to pursue careers in other fields. Typically around 60% of our students will continue their studies at University, with the remainder following either careers or Higher Apprenticeship programs with employers.

Students have gained University places to study:

Mechanical Engineering – Queen Mary University London
Mechanical Engineering - UCL
Civil Engineering – Imperial College London
Aerospace Engineering (with space technology) – University of Hertford
Industrial Design – Brunel University
Mechanical Engineering – De Montfort University

Students have gained employment or Higher Apprenticeship programs with:

Hovis (Engineering and manufacturing) – Huddersfield and Forest Gate
Stagecoach (PSV maintenance) – Barking
MED (Computer Aided Design) – Upminster
Kone (electrical/mechanical engineering)– Central London

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Subject Specific Links and visits

A range of TV series are available on a variety of DT and Engineering topics. Programmes on channels such as 'Quest' like 'How it's Made' and 'Mighty Planes' or even BBC2's 'Top Gear' all provide an insight into design and manufacturing in applied situations.

Places to visit linked to DT and Engineering:

There are many interesting places which you can visit to help support your child's understanding of Design Technology and Engineering

The Science Museum – The Science Museum is the most visited science and technology museum in Europe. There are over 15,000 objects on display, including world-famous objects such as the Apollo 10 command capsule and Stephenson's Rocket. www.sciencemuseum.org.uk

The Design Museum – Located on the River Thames, near Tower Bridge, the Design Museum offers inspiring insights into the world of design with exhibitions on fashion, architecture, furniture, graphic, product, transport and digital design. Alongside its cutting edge programme of temporary exhibitions the museum also hosts a variety of talks and family activities. www.designmuseum.org

The Faraday Museum at the Royal Institution – This grand building just off Piccadilly has been home to 14 Nobel prizewinners, and housed the laboratories of some of the world's greatest scientific minds. The small but entertaining exhibition explores the illustrious history of the RI, and uses animations and comedy to explain some of the groundbreaking concepts and equipment on show. www.rigb.org/visit-us/faraday-museum

The Royal Gunpowder Mills – Located in Waltham Abbey, The Royal Gunpowder Mills is a great place for families to spend days out exploring the secret history of gunpowder, explosives and rocket propellants through our engaging interactive Exhibitions, Science Shows and Children's Activities. www.royalgunpowdermills.com

Kirkaldy Testing Museum – In Southwark, David Kirkaldy and his machine helped shape today's world, testing materials for such as bridges from St Louis to Sydney via Blackfriars; railways; Liberty ships; the Skylon and Comet airliner. His Victorian workshop still houses the working machine and more. Open on the first Sunday of each month. www.testingmuseum.org.uk

London Transport Museum – This museum whisks you on a journey of London's transportation system since 1800, through fascinating and colourful displays, bus and tube simulators and many family-friendly interactive games and activities. www.ltmuseum.co.uk

The Crystal – The Crystal, located in Docklands, a sustainable cities initiative explores the future of cities. Home to the world's largest exhibition focused on urban sustainability and a world-class centre for dialogue, discovery and learning. The Crystal lets students experience first-hand many of the pioneering solutions and innovative technologies that are driving future trends for a more sustainable world. www.thecrystal.org

Any Questions?

Email: Office@thewarrenschool.net

https://www.thewarrenschool.net/the-sixth-form/the-sixth-form-phase/welcome-to-the-sixth-form/