

The background of the slide is a blue-tinted image of an engineering drawing. It features various technical sketches, including a cross-section of a mechanical part, a gear, and a circular component. A metal ruler with a scale is positioned diagonally across the right side of the image. A compass is also visible, resting on the ruler. The word "Engineering" is written in a large, bold, black font, centered over a white rectangular area in the middle of the slide.

Engineering

Useful Links:

- Replay of this PowerPoint with audio commentary: <https://youtu.be/S4LFAQmtXRU>
- Engineering Student Interview: <https://youtu.be/jWIJJAwbDA>
- Edd & Chris Talk More About the Engineering Course with Bonus Student Interviews: <https://youtu.be/OretJzNSg9Q>

What is Engineering?

- Engineering is all about solving problems using a combination of maths and physics to understand and investigate the world around us. Engineers need to think logically but also need to be creative in their approach to solving problems.
- Engineers don't necessarily need a fantastic memory. Engineering is all about finding solutions to problems and finding out **how** things work!
- The course covers the basic mathematical and scientific principles of engineering, be that mechanical, electrical, or civil engineering. As part of the course you will learn about and solve problems in a huge variety of topics



Common Misconceptions about Engineering!

Often people assume that Engineering is all about car engines, spanners, wrenches and boilers. Or, otherwise people think that Engineering is about building things, however, there are many different types of Engineer:

- Mechanical Engineer
- Electrical Engineer
- Civil Engineer
- Nuclear Engineer
- Systems Engineering
- Aerospace Engineering

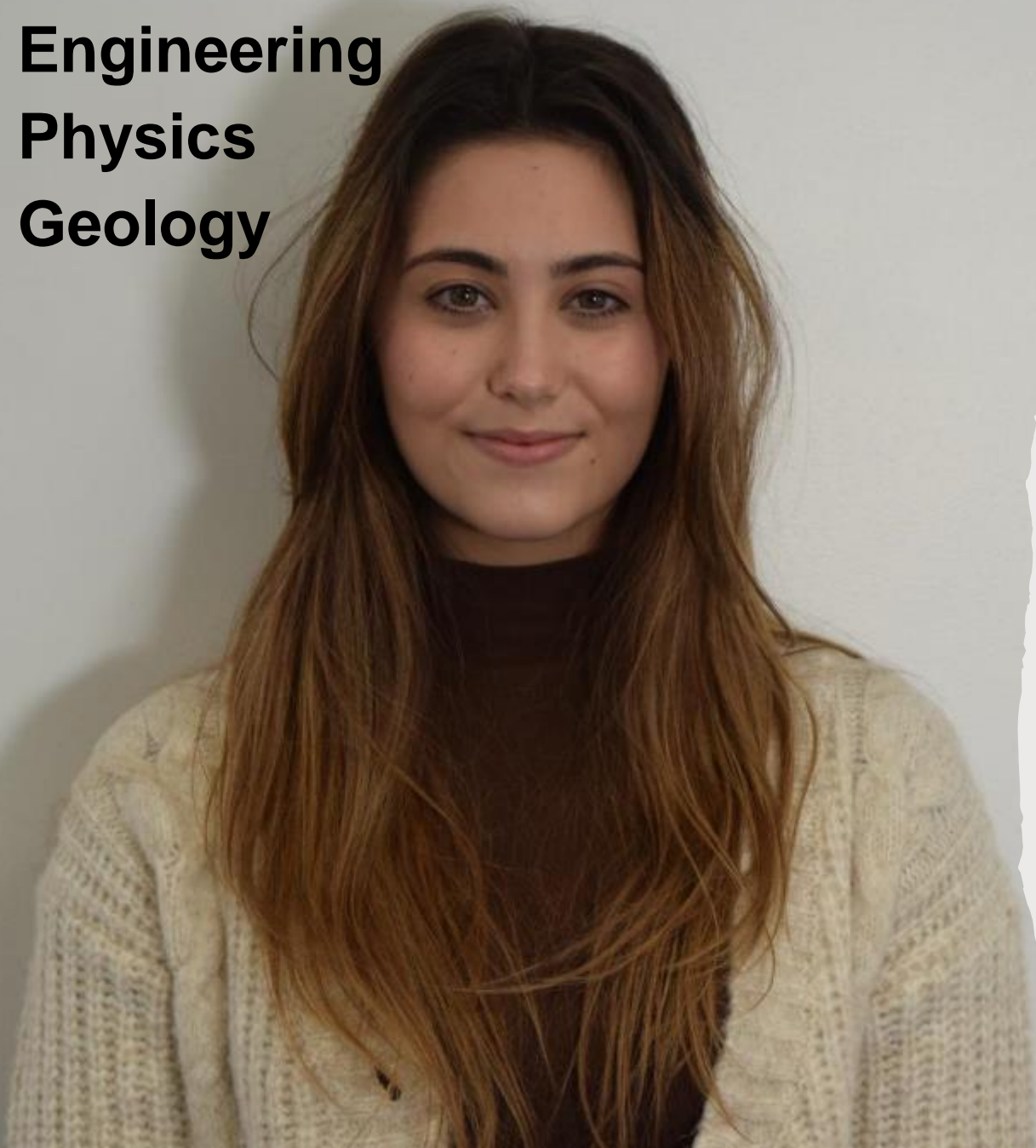
While you can study various 'Engineering' courses to become a car mechanic or a machinist, this Engineering course is about the **problem solving skills** required to be an *Engineer*.

The course is only assessed by written exam and coursework, no practical skills are evaluated as part of the qualification.



Example Student:

- **Engineering**
- **Physics**
- **Geology**



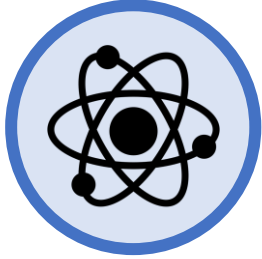
“Engineering has given me an insight to a **wide range of areas** and, along with the coursework, has enabled me to do further research into topics of interest such as Material Science.

The **mathematical** aspect of Engineering supports certain topics throughout the A-level Physics course where you can widely use formulas to solve calculations.

After College, I aim to undertake a degree in **Aerospace Engineering with Pilot Studies.** “

The Engineering Course Has 6 Units

Year 1



Science for Engineering

- Motion
- Forces
- Moments & Torque
- Energy & Power
- Materials
- Circuits
- Pressure
- Fluid Flow
- Heat
- Thermal Physics
- Gas Laws

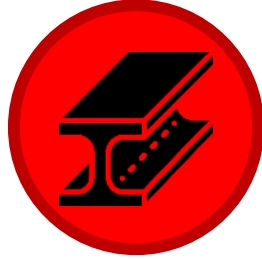
January Exam



Mathematics for Engineering

- Geometry
- Algebra
- Solving Equations
- Graphs
- Exponentials
- Logarithms
- Calculus
- Statistics
- Probability

May Exam



Mechanical Engineering

- Motion
- Forces
- Moments
- Energy & Power
- Materials
- Friction
- Geometry
- Beams
- Levers
- Pulleys
- Gears

May Exam



Materials Science

- Material categories
- Atomic structure
- Material forms
- Failure modes
- Manufacturing processes
- Internal structures of steel
- Heat treatment methods
- Plastics
- Smart materials

Coursework

Year 2



Electrical Engineering

- Circuits
- Resistance
- Electrical Power
- AC
- Inductance
- Capacitance
- Motors
- Power distribution
- Rectifiers
- Circuit Breakers
- Op Amps

Jan 2023 Exam



CAD Project

- You will learn how to interpret technical drawings and create your own.
- You will develop the skills to create 3D models using different surface techniques and use software to show assembly of multiple parts.

Coursework

- The Engineering course belongs to a group of qualifications called Cambridge Technicals.
- Instead of using letters, Cambridge Technical qualifications are graded as pass, merit, distinction and distinction star. If you choose to apply for Higher Education courses, for example University, your grade will be converted into UCAS points in the same way that A Level qualifications are.

A-level	UCAS Points	Engineering 2 Years	UCAS Points
A*	56	Distinction*	56
A	48	Distinction	48
B	40		
C	32	Merit	32
D	24		
E	16	Pass	16
U	0		

- Cambridge Technical Engineering is well-respected by employers, particularly given the significant maths content and rigorous assessment. The qualification will enable you to progress onto Engineering apprenticeships and foundation degrees. Be aware however that to study Engineering at University degree level , A-level Mathematics with A-level Physics is not only preferable but expected at the most competitive universities.

How do we support you?

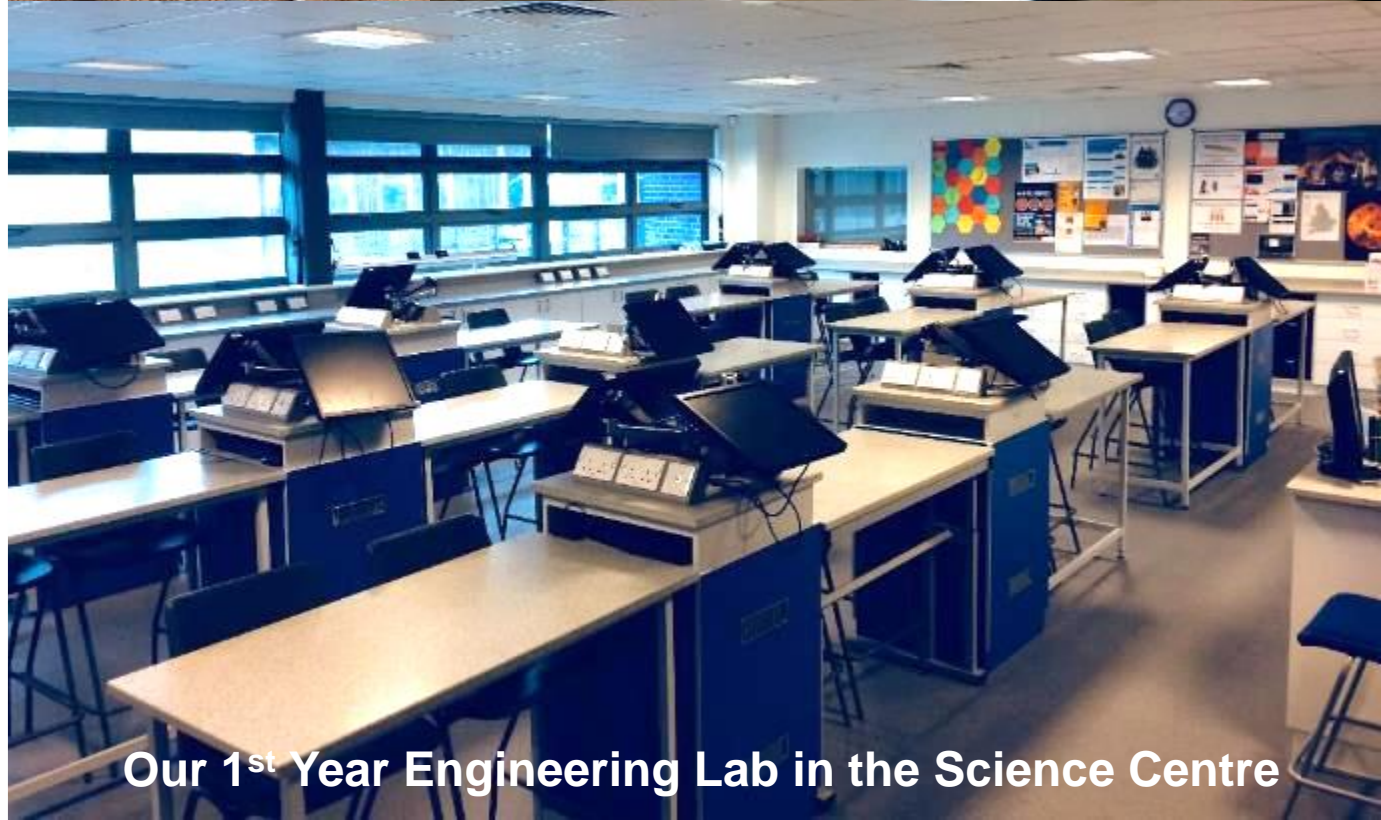
- Here at Worcester Sixth Form College all of our Engineering teachers are subject specialists with degrees in Physics, and we love what we do!
- You'll be taught from the basics so that you can understand everything properly and ultimately have everything you need become a successful Engineering student.
- With access to experienced teachers, excellent resources and dedicated workshops, year after year our students achieve results that *exceed* the nationwide average.



Chris



Edd



Our 1st Year Engineering Lab in the Science Centre



Engineering students will be encouraged to take part in the Junior Internship Programme, where they will gain work experience with a local engineering company and, with the help of a mentor supplied by the company, complete an Extended Project Qualification.

What does the Programme Offer?

- An insight into careers in the local and surrounding areas and support in understanding how to access jobs in these organisations/sectors
- A tour of the sponsor organisation
- Work experience of a minimum of 2 weeks a year
- One hour per month mentoring for 2 years from the sponsor organisation's senior management team
- Input into the completion of a subject-related project - an Extended Project Qualification will be gained as a result of the project and work experience with the industry sponsor





What to Expect in Your First Weeks with Us

- In your first lesson we'll be getting to know you! The thought of being in a new class with new people can seem scary at first, however you'll quickly get to know those around you and make friends with the help of little group activities that we weave into lessons 😊



- You'll be given your very own copies of our class workbooks. You don't need to buy or borrow a textbook – these will be yours to keep and write in. They've been rated as “excellent” by our students!

- One of the first topics we study will be kinematics (the physics of motion). We'll recap all the basics from GCSE in the first couple of lessons while you're getting your bearings and getting used to your new surroundings! You'll have 4 lessons each week one of which will be a maths lesson.



Engineering Applied



Bridging Task



Subject Leaflet

L3 Certificate/Extended Certificate in Engineering Summer Bridging Task



The purpose of giving you a summer bridging task

- i. To provide a bridge from level 2 to level 3 study, and lead into the early stages of the course
- ii. To engage you in independent learning which is required at level 3
- iii. To encourage you to develop your work ethic and commitment to study
- iv. To measure your suitability for the course and assess your initial levels of achievement

All of your work must be typed and clearly presented – please reference your work where possible

Task 1: Define the following key terms and draw some diagrams to help explain the definition(30mins):

- Displacement
- Velocity
- Acceleration
- Gradient
- Acceleration due to gravity
- The Newton
- The Joule

Task 2: Produce a PowerPoint presentation to outline an area of Engineering that you find interesting. It can be something you learnt about at GCSE or from a documentary you have watched or a topic you have read about. You should include:

- Information about the topic
- What you find interesting about the topic
- What you would like learn more about the topic

Task 3:

A useful resource for your study is provided by the examination board.

<https://www.ocr.org.uk/qualifications/cambridge-technicals/engineering-2016-suite/assessment/#level-3>

Spend some time exploring this website. You will find information about the course, exam papers, mark schemes and exam reports. In particular look at the formulae booklet and see which formulae you have already used. The units you will be studying are unit 1,2,3,4,11 & 22. Practice is a key part of success at A level, so make sure you are familiar with the types of question that can be asked.