

OCR Design & Technology A Level (Focusing on the Engineering elements)

Why study Engineering at The Sixth Form at Ridgewood?

- OCR's A level in Design and Technology enables you to take every opportunity to integrate and apply your understanding and knowledge from other subject areas studied during Key Stage 4, with a particular focus on science and mathematics. The course allows you the opportunity to apply wider learning through creativity and innovation.
- This course will provide you with the knowledge, understanding and skills needed for progression into employment or further study within engineering.
- Former students of the Engineering department at Ridgewood have gone on to study and pursue careers in mechanical engineering, general engineering and electronic engineering.
- We have rich and wide-ranging resources from a heat treatment room that is dedicated to Engineering to a STEM laboratory in our sixth form building.
- We have two specialist Engineering teachers who will support you throughout the course, alongside an Engineering and Electronics specialist teaching assistant who works closely with our teachers to provide additional support for our students.
- We also work closely with local engineering companies to enhance the experience of our students and demonstrate real life engineering environments.

What topics will I study in this subject?

Topic	What this means
Principles in design engineering	The subject content of this component is focused towards electronics and engineered products and systems and their analysis in respect of: <ul style="list-style-type: none"> • materials and components, and their selection and uses in products/systems • wider issues affecting design decisions.
Problem solving in Engineering	The aim of the component is to give learners a framework for analysing existing products/systems that enables them to make considered selections of appropriate materials, components, systems and manufacturing processes when designing. The component brings together the knowledge, understanding and skills acquired in the NEA.
NEA – Iterative Design Project	The Iterative Design Project is a substantial design and made project that is individual to you. It follows the methodology of iterative designing. You will be required to explore contexts of your own that are both contemporary and challenging. The undertaking of your project should demonstrate your self-management skills.

What skills will I need in this subject?

Skill	What this skill involves in this subject
Analysis	In Engineering, your lessons and independent study work will involve analysis. This means you will be given data and information that you will need to research, and you will be required to write at length about your findings. You will need to give detailed explanations and justify your choices.
Solving engineering problems	As part of your coursework you will be expected to use problem-solving skills. You will be presented with a number of problems. You will be expected to research and find a number of creative engineering solutions to the problems presented and then justify your decisions on your solution.
Computer Aided Design	In your lessons and independent study time you will be expected to develop and use Computer Aided Design skills. You will have to apply these in developing engineering designs.

What will my lessons involve?

- We will discuss key terminology and identify areas that you must independently research.
- In theory lessons, you will listen to key information about a topic area and create sets of notes to support your coursework or revision for the exam.
- You will conduct independent research using a variety of sources including internet-based engineering resources, reports, statistical data and websites, and the wealth of engineering books, guides and specification catalogues we have available in the Sixth Form.
- You will also complete training on Solid Edge CAD software in order to be able to use this throughout your coursework.

What will my independent study involve?

- In order to gain the highest grades in the exam you must complete at least one hour of independent study for every lesson. During these sessions you are expected to produce revision resources that will prepare you for the exams.
- In class you will have identified your gaps in knowledge so it will be clear which areas you need to work on. Examples of this are creating mind maps, creating revision flash cards and self-quizzing.
- You may also have to complete work collaboratively such as completing a group presentation on a given area of the exam.
- You will be expected to practice your CAD skills and develop your understanding of the Solid Edge software package.
- For coursework, your independent study will involve research and exploration of areas related to the content and scenario presented in the assignment brief.

How will I be assessed?

Percentage exam assessment: 50%	Percentage coursework assessment: 50%
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Assessment	Details of assessment
Principles in design engineering	<p>External assessment written exam, 1 hour 30 minutes, 26.7% of the overall mark.</p> <p>This paper is set out through four sets of questions that predominantly cover technical principles within each endorsed title. Learners will be required to:</p> <ul style="list-style-type: none"> •analyse existing products •demonstrate applied mathematical skills •demonstrate their technical knowledge of materials, product functionality, manufacturing processes and techniques •demonstrate their understanding of wider social, moral and environmental issues that impact on the design and manufacturing industries. <p>Exam is taken in the summer of Year 13</p>
Problem solving in Engineering	<p>External assessment written exam, 1 hour 45 minutes, 23.3% of the overall mark.</p> <p>This component has a series of longer answer questions that require learners to demonstrate their problem solving and critical evaluation skills. Learners will be required to:</p> <ul style="list-style-type: none"> •apply their knowledge, understanding and skills of designing and manufacturing prototypes and products • demonstrate their higher thinking skills to solve problems and evaluate situations and suitability of design solutions.
NEA	Internal assessment coursework, worth 50% of the overall mark. Approx 65 hrs

	Learners identify a design opportunity or problem from a context of their own choice, and create a portfolio of evidence in real time through the project to demonstrate their competence.
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How do I know this is the right course for me?

- You will be a strong independent learner who can analyse and decimate written and numerical information accurately.
 - You will relish the challenges of researching, conducting and analysing data from practical investigations.
 - You will enjoy working collaboratively and if you prefer a combination of coursework and exam.
 - One of the challenges is time management as there are lots of deadlines and managing both coursework and exam content at the same time can be difficult. It is important that you plan from the very beginning of the course your independent study time in school and at home so that you have a clear plan of when you will complete work. This is especially important if your combination of subjects means that you have other coursework to complete.
 - You need to be keen to broaden your knowledge of engineering applications or be interested in studying an engineering related degree at university. It is important that you choose the correct combination of subjects to progress to an Engineering degree as maths and physics are often required.
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