SUBJECT & QUALIFICATION: Engineering Technical Award

Why is the study of Engineering important?

Engineering will help you acquire knowledge, understanding and technical skills through work-related contexts as part of your Key Stage 4 learning. The qualification is equivalent to and compliments GCSEs to help develop work-related skills in the Engineering sector. It will help broaden your experience and understanding of where your studies can take you in the future.
Engineering is a driving force in the UK's economy, accounting for 21.4% (£1.2 trillion) of the UK's £5.7 trillion turnover in 2018. However, there is a considerable shortage of appropriately skilled workers in the engineering sector. One of the reasons for this is due to a lack of awareness among young people of the educational routes into engineering occupations, despite the fact that pursuing STEM subjects remains a priority for many young people.

What skills will the study of Engineering teach you?

You will develop a range of skills which are attractive to employers, colleges and universities including:

- **Communication**
- **Critical thinking**
- **Learning independently**
- **Research**
- **Taking on responsibility**
- **Time management**

What will you know and understand from your study of Engineering?

Unit 1 introduces learners to interpreting different types of engineering information in order to plan how to produce engineered products. Learners will develop the skills needed to work safely with a range of engineering processes, equipment and tools. With these skills, learners will acquire knowledge of a range of engineered processes that are fit for purpose for producing an end product. Finally, learners will learn how to test the final product against the information given in the technical information to ensure that they have met the given standards of the assigned brief.

Unit 2 allows learners to experience and gain understanding of how an engineered product is adapted and improved over time. The unit is linked to the engineering product produced in Unit 1 of the qualification. It will require the learner to work to a given brief to adapt an existing component, element or part of the engineering outcome that they produced for Unit 1.

Unit 3 introduces learners to how engineering design is impacted by a range of external considerations such as the properties of materials, both traditional and smart developing materials, as well as

methods of manufacturing in both the traditional and new and emerging technologies. The unit also gives the learner the opportunity to explore how engineering achievements have had an impact on modern day life at home, work and in society in general. Finally, the unit allows learners to develop understanding and skills to assist them in the solving of engineering problems.

How can you deepen your understanding of Engineering?

- **www.technologystudent.com**
- **www.bbc.co.uk/schools/bitesize**
- **www.engineering.com**
- **https://qualifications.pearson.com/en/qualifications/btec-techawards/engineering.html**
- **Revise Engineering Revision Guide**
- **Tech Award Engineering Student Book**

How are you assessed in Engineering?

You will be assessed through a mixture of exams and project work. Unit 1 will involve producing a manufacturing product, which will be worth 40% of the qualification. This can range from a basic hand tool to complex machinery. The product will need to be developed over 20 hours.

Unit 2 will also be assessed through project work and will be worth 20% of the qualification. Here you will apply your problem-solving skills to answer a brief and produce a solution. You will produce your solution over 10 hours.

Unit 3 will involve a single exam, which is worth 40% of your qualification. The exam will last 1 hour and 30 minutes. The exam will be made up of multiple-choice questions, and short and extended answers.

Key Assessment Objectives

The 3 key learning objectives for Engineering are: (add or delete rows as appropriate)
LO1 or AO1: Demonstrate knowledge and understanding from across the specification.
LO2 or AO2: Apply skills (including practical skills), knowledge and understanding in a variety of contexts and in planning and carrying out investigations and tasks.

OPEN ELEMENT SUBJECT OVERVIEW

LO3 or AO3: Analyse and evaluate information, making reasoned judgements and presenting conclusions.

Coursework requirements

The total qualification time for this qualification has been calculated as 180 hours.
This includes:
• 120 hours of guided learning and/or supervised assessment
• 60 hours of self-directed study which may include additional assignments and tasks set by the teacher (homework) and independent use of online learning resources.

How can Engineering support your future?

The Vocational Award in Engineering has been designed to support learners in schools and colleges who want to learn about this vocational sector and the potential it can offer them for their careers or further study. It is most suitable as a foundation for further study. This further study would provide learners with the opportunity to develop a range of specialist and general skills that would support their progression to employment.
After completing this qualification, students can go on to study A levels, college courses, apprenticeships or employment.

Study of Engineering can lead to a wide range of careers:

• The UK is regarded as a world leader in engineering, which covers a wide range of exciting and rapidly developing areas such as renewable energy, space, low carbon, aerospace, automotive, agri-food and bioscience. People with engineering skills are always in demand. Between 2010 and 2020, engineering companies are projected to have 2.74 million job openings.

- **Aerospace engineer**
- **Biomedical engineer**
- **Civil/structural engineer**
- **Computer engineer**
- **Electrical/electronic engineer**
- **Environmental engineer**
- **Marine engineer**
- **Mechanical engineer**
- **Product engineer**

OPEN ELEMENT SUBJECT OVERVIEW

INSERT SUBJECT NAME Course Overview		
Term	Year 1	Year 2
Autumn 1	Introduction to Engineering skills – Skills building for engineering workshop processes and interpretation of engineering information. Understanding how Engineering Drawings are used in engineering.	Complete Unit 1 task Review functional characteristics of Unit 1 design
Autumn 2	Presenting Key information tasks. Planning stages. Engineering drawings to BS8888	Unit 3 Focus – Materials and properties of materials in products (mobile phones, security alarms, bicycles & children's play areas). Focus on calculations and mathematical techniques as detailed in course specification. Introduction to Unit 2 task.
Spring 1	Mock Examination focusing on BS8888 Engineering Drawing. Unit 3 focused investigation – Structural Design (Bicycles). Testing – Learners gain familiarity with simple testing techniques.	Learners undertake Unit 2 Task Delivery of Unit 2 task interspaced with learners looking at methods of presenting information and developing analytical skills.
Spring 2	Unit 2 mock design task – Focus on designing Engineered Solutions for addressing the Unit 2 Brief. Focus on: Sketching, iterative process, engineering specifications and CAD/traditional Engineering drawing skills.	Learners undertake Unit 2 Task Delivery of Unit 2 task interspaced with learners looking at methods of presenting information and developing analytical skills.
Summer 1	Unit 3 focused investigation – Mechanical design (theme parks) & Electronic Design (Mobile phone & Smart technology). Focused Unit 1 Mock Task – Learners produce an outcome from a given set of engineering drawings and technical data.	Focus on Unit 3 examination preparation Material developments including Smart materials and their application in Engineering Design. The impact of the development in electronics and how they have impacted on engineered products. Learners undertake small workshop tasks to enforce understanding of engineering processes. Understanding and applying risk assessments. Understanding common engineering drawing standards
Summer 2	Focus on extracting engineering information, planning, producing and safety. Evaluation techniques to review outcomes. Learners undertake Unit 1 Task (Analysis & Planning)	