



WJEC Level 1/2 Vocational Award in Engineering

Why is the study of WJEC Level 1/2 Vocational Award in Engineering important?

WJEC Level 1/2 Vocational Award in Engineering offers a learning experience that focuses learning for 14-16 year olds through applied learning, i.e. acquiring and applying knowledge, skills and understanding through purposeful tasks set in sector or subject contexts that have many of the characteristics of real work. The qualification is built from discrete units, but allows for both synoptic learning and assessment. Each unit has an applied purpose which acts as a focus for the learning in the unit. The applied purpose is the vehicle through which the learning contained in the unit is made relevant and purposeful. It is also the means by which learners are enthused, engaged and motivated to study engineering. The applied purpose provides the opportunity for authentic work related learning, but more than this, it will require learners to consider how the use and application of their learning impacts on individuals, employers, society and the environment. The applied purpose will also enable learners to learn in such a way that they develop:

- skills required for independent learning and development;
- a range of generic and transferable skills;
- the ability to solve problems;
- the skills of project based research, development and presentation;
- the fundamental ability to work alongside other professionals, in a professional environment;
- the ability to apply learning in vocational contexts.

The qualifications have been devised around the concept of a 'plan, do, review' approach to learning where learners are introduced to a context for learning, review previous learning to plan activities, carry out activities and review outcomes and learning. This approach mirrors engineering production and design processes and also provides for learning in a range of contexts thus enabling learners to apply and extend their learning. As such, the qualification provides learners with a broad appreciation of work in engineering related industries and wider opportunities for progression into further education, employment or training.

The qualification has been designed to build on the skills, knowledge and understanding acquired at Key Stage 3, particularly skills related to literacy, numeracy, use of technology and design.

The WJEC Level 1/2 Vocational Award in Engineering has been designed to develop in students the skills needed for progression from Key Stage 4 and GCSE learning to further education, employment and training. The successful completion of this qualification could provide the student with opportunities to access a range of Level 3 qualifications including GCE, apprenticeships and vocationally related qualifications. These include:

- GCE/Level 3 in Engineering;
- GCE in Design & Technology;
- Principal Learning Level 3 in Engineering;
- Apprenticeships in Engineering.



What skills will the study of WJEC Level 1/2 Vocational Award in Engineering teach you?

During this course, you will develop a range of skills including developing the knowledge on how engineered products meet requirements. You will be able to develop creative ideas for engineered products, be able to communicate design solutions and interpret engineering drawings. There will be workshop based practical projects where you will develop an array of skills including using engineering processes in production of their engineered products, understand properties of engineering materials, you will be able to plan engineering production and be able to use engineering tools and equipment safely. By the end of the course you will be able to solve engineering problems and understand the effects of engineering achievements past and present.

What will you know and understand from your study of WJEC Level 1/2 Vocational Award in Engineering?

Unit One - Manufacturing Engineering Products (40% of the qualification)

Overview of the unit

Unit 1 provides learners with the opportunity to interpret different types of engineering information in order to plan how to manufacture engineering products. Learners will develop knowledge, understanding and skills in using a range of engineering tools and equipment in order to manufacture and test an end product.

- 1.1 Understanding engineering drawings
- 1.2 Planning manufacturing
- 1.3 Using engineering tools and equipment
- 1.4 Implementing engineering processes

Unit Two - Designing Engineering Products (20% of the qualification)

Overview of the unit

Unit 2 allows learners to explore how an engineered product is adapted and improved over time, and it offers learners the opportunity to apply their knowledge and understanding to adapt an existing component, element or part of the engineering outcome that they manufactured for Unit 1.

- 2.1 Understanding function and meeting requirements
- 2.2 Proposing design solutions
- 2.3 Communicating an engineered design solution
- 2.4 Solving engineering problems

Unit Three - Solving engineering problems (40% of the qualification)

Overview of the unit

Unit 3 introduces learners to a range of considerations that impact on engineering design and how modern engineering has had an impact on modern day life at home, work and in society in general.

- 3.1 Understanding the effects of engineering achievements
- 3.2 Understanding properties of engineering materials
- 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials
- 3.4 Solving engineering problems



How can you deepen your understanding of WJEC Level 1/2 Vocational Award in Engineering?

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, and, according to Engineering UK , the proportion of young people aged 11 to 14 who said they would consider a career in engineering was 54.7% in 2019.

How are you assessed in the WJEC Level 1/2 Vocational Award 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 X key learning objectives for WJEC Level 1/2 Vocational Award in Engineering are:

AO1: Demonstrate knowledge and understanding from across the specification.

AO2: Apply skills (including practical skills), knowledge and understanding in a variety of contexts and in planning and carrying out investigations and tasks.

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



Coursework requirements

Although there are no formal entry requirements, learners would find the following learning skills and aptitudes helpful: basic proficiency in literacy and numeracy, problem solving, and motivation to work independently.

How can WJEC Level 1/2 Vocational Award in 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.

Study of WJEC Level 1/2 Vocational Award in Engineering can lead to a wide range of careers:

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

WJEC Level 1/2 Vocational Award in Engineering Course Overview

Term	Year 1	Year 2
Autumn 1	Unit 1 Manufacturing Engineered Products 1.1 Understanding engineering drawings	Unit 2 Designing Engineered Products 2.3 Communicating an engineered design solution
Autumn 2	Unit 1 Manufacturing Engineered Products 1.2 Planning manufacturing	Unit 2 Designing Engineered Products 2.4 Solving engineering problems
Spring 1	Unit 1 Manufacturing Engineered Products 1.3 Using engineering tools and equipment 1.4 Implementing engineering processes	Unit 3 Solving Engineering Problems 3.1 Understanding the effects of engineering achievements
Spring 2	Unit 1 Manufacturing Engineered Products	Unit 3 Solving Engineering Problems 3.2 Understanding properties of engineering



OPEN ELEMENT SUBJECT OVERVIEW

	1.3 Using engineering tools and equipment 1.4 Implementing engineering processes	materials
Summer 1	Unit 2 Designing Engineered Products 2.1 Understanding function and meeting requirements	Unit 3 Solving Engineering Problems 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials
Summer 2	Unit 2 Designing Engineered Products 2.2 Proposing design solutions	Unit 3 Solving Engineering Problems 3.4 Solving engineering problems