

NCFE Level 1/2 Technical Award in Engineering

Course Overview: Level 1/2 Technical Award Engineering has 2 key components – an externally assessed examination paper (40% of the overall grade) and a ‘synoptic project’ (60% of the overall grade). More detailed information about each component can be found below ...

What will the learner study as part of this qualification?

Unit 1 (External Examination): worth 40% of the overall grade and shows learners how to:

- Understand engineering disciplines
- Understand how science and maths are applied in engineering
- Understand how to read engineering drawings
- Understand properties and characteristics of engineering materials and know why specific materials are selected for engineering applications
- Understand engineering tools, equipment and machines

Unit 2: Synoptic Project (Internally Assessed / Externally Verified) worth 60% of the overall grade and shows learners how to:

- Produce hand-drawn engineering drawings
- Produce Computer Aided Design (CAD) engineering drawings
- Demonstrate production planning techniques
- Demonstrate processing skills and techniques applied to materials for a manufacturing task
- Understand how to create, present and review art and design work

NCFE Level 1/2 Technical Award in Engineering complements GCSE qualifications. This qualification is designed to match the rigour and challenge of GCSE study and is an equivalent qualification. The qualification is graded Level 1 Pass / Merit / Distinction / Distinction* and Level 2 Pass / Merit / Distinction / Distinction* (equivalent to GCSE grades 9 – 1). This qualification is appropriate for learners who are looking to develop a significant core of knowledge and understanding in engineering and be able to apply their learning.

The qualification has been designed to sit alongside the requirements of core GCSE subjects and is appropriate for learners who are motivated and challenged by learning through hands-on experiences and through content which is concrete and directly related to those experiences. It is distinct from GCSE Engineering, as it encourages the learner to use knowledge and practical tools to focus on developing transferrable skills in practical engineering accompanied by the theoretical knowledge to help with progression into employment and onto further education.

Curriculum Mapping: Engineering

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 9 (Engineering Foundation)	<p>Familiarisation with CAD</p> <ul style="list-style-type: none"> ➤ 2D Design ➤ 3D CAD packages <p>Careers in Engineering – overview of engineering disciplines</p>	<p>Materials Focus: Natural and manufactured timber</p> <p>Manufacturing Skills: Phone / Tablet Holder – modelling, use of hand and machine tools (Autumn 1&2)</p>	<p>Isometric Drawing Technique</p> <ul style="list-style-type: none"> ➤ Sketch work ➤ Line types, rendering / shading <p>Tools and Equipment Overview + Health and Safety (appropriate use of tools / equipment)</p>	<p>Materials Focus: Polymers</p> <p>Manufacturing Skills: Stationary Holder – combining materials, computer aided manufacture, joining materials (Spring 1&2)</p>	<p>Engineering Drawing Introduction</p> <ul style="list-style-type: none"> ➤ First Angle Projection ➤ Third Angel Projection ➤ Introduction to British Standards <p>Materials Properties Overview</p>	<p>Materials Focus: Polymers</p> <p>Manufacturing Skills: Table Lamp – bending / shaping metals, combining materials, applying finishes, evaluation (Summer 1&2)</p>
YEAR 10	<p><i>Unit 1 Preparation</i></p> <p>Engineering disciplines – how specific engineering projects and products have shaped the modern world.</p> <p>Health and safety legislation – focus on personal safety measures for each engineering discipline.</p>	<p><i>Unit 1 Preparation</i></p> <p>SI units of Measurements</p> <p>Application of basic SI units in projects and products</p> <p>Equations for Properties</p> <p>Application of equations in projects and products (Describe and Calculate Energy, Forces and Motion, Electrical, Geometry)</p> <p>Assessment 4</p>	<p><i>Unit 1 Preparation</i></p> <p>Understand how to read engineering drawings</p> <ul style="list-style-type: none"> ➤ Drawing conventions ➤ British Standards <p>Understand the properties and characteristics of engineering materials and why specific materials are selected for engineering applications</p>	<p><i>Unit 1 Preparation</i></p> <p>Understand engineering tools, equipment and machines</p> <ul style="list-style-type: none"> ➤ Marking-out ➤ Modification ➤ Joining ➤ Finishing <p>Control measures Safe and correct use of tools, equipment and machines</p> <p>Assessment 5</p> <p>External Exam (Unit 1)</p>	<p><i>Unit 2 Preparation</i></p> <p>Produce hand drawn engineering drawings</p> <ul style="list-style-type: none"> ➤ Freehand sketch-work ➤ Hand drafted isometric drawings ➤ Hand drafted orthographic drawings 	<p><i>Unit 2 Preparation</i></p> <p>Produce Computer Aided Design (CAD) engineering drawings</p> <ul style="list-style-type: none"> ➤ Production of CAD isometric drawings ➤ Production of CAD orthographic drawings <p>Assessment 5</p>

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 11	<i>Unit 2 Preparation</i>	<i>Unit 2 – Manufacture</i>	<i>Unit 2 – Manufacture</i>	<i>Unit 2 – Finalisation</i>	<i>Unit 2 – Finalisation</i>	
	<p>Demonstrate production planning techniques</p> <ul style="list-style-type: none"> – Risk assessment (hazards / risks / controls) – Production plan <ul style="list-style-type: none"> ➤ Tools and equipment ➤ Health and safety ➤ Quality control ➤ Flow chart symbols ➤ Time planning 	<p>Demonstrate processing skills and techniques applied to materials for a manufacturing task</p> <ul style="list-style-type: none"> – Skills and Techniques – Modify shape and size of materials – Join materials – Finish materials – Preparation of use <p>Safe and Correct Use of Tools, Equipment and Machines</p> <ul style="list-style-type: none"> – Control measures <p>Assessment 6</p> <p><i>Timing and working independently practice</i></p>	<p>Demonstrate processing skills and techniques applied to materials for a manufacturing task</p> <ul style="list-style-type: none"> – Skills and Techniques – Modify shape and size of materials – Join materials – Finish materials – Preparation of use <p>Safe and Correct Use of Tools, Equipment and Machines</p> <ul style="list-style-type: none"> – Control measures 	<p>Completion of synoptic project portfolio / Review of all responses to all learning outcomes</p> <p>Responses to feedback</p> <p>Project submission for assessment / marking</p> <p>Assessment 6</p> <p>Internal Assessment (Unit 2)</p>	<p>Review of synoptic project and resubmission if required (in line with NCFE guidelines)</p> <p>Internal Assessment (Unit 2) – if required</p>	