

A guide to Engineering Skills (1155)

City & 
Guilds

May 2003

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Our International Vocational Qualification in Engineering Skills is designed for anyone who wants to start a career in one of the engineering subjects and leads into subject specialisms for a person committed to engineering. This programme replaces 8200, 8210, 8220 and 8600.

Who is this qualification suitable for?

This qualification is suitable for young people in the final stages of their school education and who want to start learning the skills and knowledge needed for a career in engineering. It is also suitable for people who are already at work and who want to re-train, or who want to have their skills and knowledge formally recognised.

This qualification can be offered in schools and colleges, and other learning centres, where access can be given to suitable workshop facilities.

There are two levels of this qualification. At Certificate level a broad introduction is provided to the theory and practical skills needed for someone starting a career in engineering.

At the Diploma level it offers specialisms in Mechanical Fitting, Plant Maintenance, Metal Machining, Electrical Engineering, Fabrication, Welding or Pipefitting. At this level it is suitable for people who are committed to a career in one of these engineering activities.

The practical skills and knowledge can be learned in the training centre and practised in the Centre's workshops. Work experience and on-the-job learning to practise skills in real working environments can be used to enhance a teaching programme, but are not compulsory.

Centres without access to workshop facilities can teach the knowledge requirements for this qualification, and enable their candidates to gain a theory qualification.

What skills will be developed in this qualification?

At **Certificate level** the candidate will learn the underpinning knowledge relevant to any engineer. Subjects include -

- Maths and drawing, science
- Safety at work
- Materials
- Using hand and machine tools
- Measuring and marking out
- Fastening and joining

At the **Diploma level**, all candidates follow a core group of subjects -

- Maths and drawing, science
- Materials

Specialisms are offered in -

- Electrical engineering, including use of tools, earthing, bonding and checking electrical systems, electrical current, conductors, insulation and magnetic materials, installation and testing, circuits and wiring.

- Metal machining, including safety, drawing and marking out, accuracy and shaping of components, milling and turning operations.
- Mechanical fitting and plant maintenance, including permits to work, temporary and permanent methods for joining metals, assembly and dismantling; identifying faults in power transmission systems, completing plant maintenance records and using drawings, sketches and diagrams; bench fitting, lifting and moving.
- Fabrication, welding and pipework, including using tube, developing patterns, lifting and moving; welding and soldering, cutting metal, inspection and testing, producing pipework, curves of intersection, surface developments, using drawing and sketches.

How can a candidate prepare for this qualification?

Our syllabus lists the practical competences and the knowledge requirements for each level. The practical competences are the skills a candidate must learn and practise, and then demonstrate. In the workshop. The knowledge requirements are the necessary knowledge that must be taught, for example in a classroom, so that the candidate understands how to carry out the tasks.

Our syllabus is used to design a training programme that allows candidates to learn the required knowledge and practise the necessary skills. You can design a programme in any way you wish as long as it includes all the subjects in the syllabus.

How is a candidate tested?

At the Certificate level – Practical competences

A checklist of practical skills that must be demonstrated.

Knowledge requirements

A one and a half hour written test with 50 multiple choice questions.

At the Diploma level – Practical competences

A checklist of practical skills that must be demonstrated for the core skills and the chosen option.

Knowledge requirements

Two one and a half hour written tests with 50 multiple choice questions each, one for the core and one for the chosen option.

The checklists can be completed at any time during the teaching programme. We recommend that they are fully completed by the time of the written examination.

Written examinations for each level will be available twice a year, in May/June and November/December.

Details about the content of the written tests, and the practical assignments are all in our syllabus.

What resources does a training centre need to offer this qualification?

You need the following –

- Suitably qualified teachers or trainers – either with some recent experience of working in the industry, or with a recent qualification in the relevant subject area. A teacher should be qualified to at least one level above the level that is being taught. For example, a person teaching candidates for the Certificate level in this qualification, should at least have the skills described in the Diploma level. The teaching of subjects in this syllabus can be shared by teams of teachers, according to their specialisms and experience.
- Access to workshop or laboratory facilities to carry out the practical work and complete the competence checklists. Workshops must have complete and correct safety equipment, machinery must be suitably guarded and operating instruction must be accessible
- Materials for practical work
- Access to personal computers and printers and software routinely used at work
- One suitably qualified person (we suggest a qualified supervisor or training manager in the industry) either working or recently retired), who is not teaching your candidates, who can confirm that your candidates have reached the necessary levels in the practical skills.

Full details about the resources needed are given in our syllabus.

What can a person do after gaining this qualification?

At Certificate level a person can work under supervision in a workplace where engineering skills are needed. At Diploma level a person can work independently and has the skills needed to carry out a variety of jobs associated with the various specialisms covered by this programme.

For those interested in further education and training we offer technician level International Vocational Qualifications in

Mechanical, Electrical and Electronic Engineering Telecommunications and Electronic Engineering Telecommunication Systems

How does this qualification differ from the Basic Engineering Trade Subjects award (8200)?

The table at the last page of this information sheet shows the main differences.

How to start?

Three simple steps –

- 1 To offer this programme, first of all you need to read the regulations and syllabus to make sure that you have the necessary resources.
- 2 Then you must apply to City & Guilds to become an approved centre for the 1155 Engineering Skills qualification.
- 3 Finally, plan your training programme using the syllabus as guidance.

What additional help can we receive?

As well as the syllabus, which is a complete guide to what you need to teach, and which includes all the checklists and applications forms that you will need, we offer –

- A suggested book list related to each syllabus section
- Specimen exam questions
- Equipment list
- Guidance on how to assess the practical skills
- Guidance on how to confirm (or verify) the results of your practical

Further information

For more information about this qualification, please contact:

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If asked for a scheme number, please quote 1155

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May 2003

How does this qualification differ from the Basic Engineering Trade Subjects and related awards (8200, 8210, 8220, 8600)?

	Basic Engineering Trade Subjects (8200 & 8600)	Engineering Skills (1155)
Syllabus content-core	<p>Similar content except Communication</p> <p>Temperature, heat, friction Fabrication Fastening and joining Principles and applications of electricity Internal combustion engines Workshop calculations</p>	<p>At certificate level Expanded to include information technology and greater emphasis on communication methods in engineering In a revised Science section</p> <p>} In diploma level specialisms</p> <p>Not covered. Included in Maths and Drawing</p>
Syllabus content- specialisms	Mechanical Fitting and Plant Maintenance (8210)	Engineering Skills (1155)
	Existing subject areas	<p>Includes core of Materials, Science, Maths and Drawing Restructured and content revised and updated into new specialisms Metal Machining Mechanical fitting and plant maintenance New option Electrical Engineering</p>
	Fabrication and Welding (8220)	Engineering Skills (1155)
	Existing subject areas	<p>Includes core of Materials, Science, Maths and Drawing Restructured and content revised and updated into new specialism Fabrication, Welding and Pipework</p>
Suggested learning hours Certificate Diploma	8200 – 1200 hours 8210 – 600 hours per specialism 8220 – 600 hours per specialism	Certificate 300 hours Diploma 300 hours for core plus one option
Written examinations 8200 Basic Engineering 8210 Mechanical Fitting and Plant Maintenance 8220 Fabrication and Welding	2 papers – one core, one specialism 2 multiple choice papers 2 papers	Certificate 1 x 1½ hour multiple choice paper Diploma 2 x 1½ hour multiple choice papers
Practical examinations All levels	Practical coursework schedules	IVQ competence checklist
Centre approval	Required to offer this qualification	Existing 8200, 8210 and 8220 centres will have approval changed to 1155 up to normal expiry date.
Visiting Verifier	Required	Required for entry to practical components