



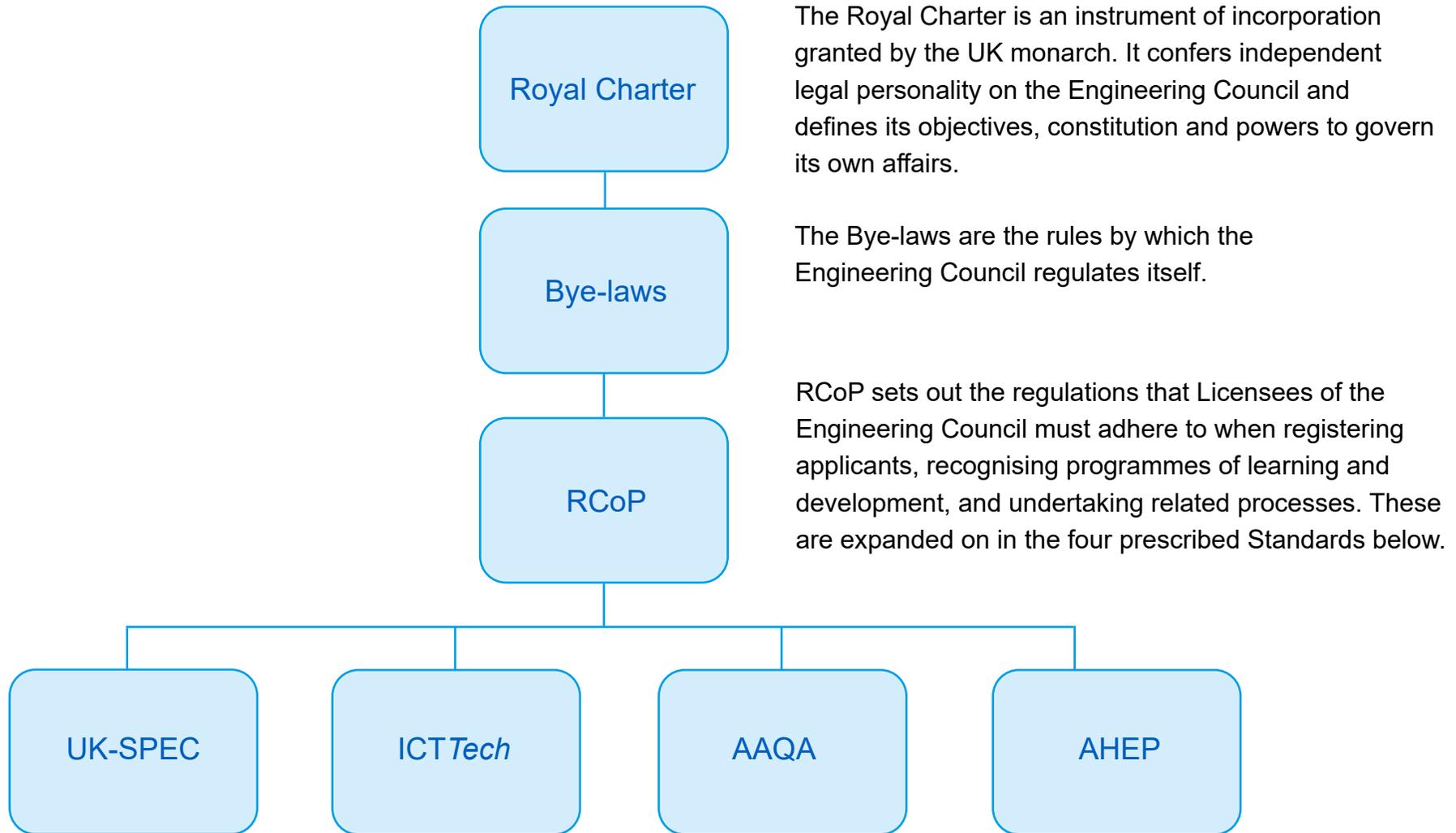
Hierarchy of regulations and prescribed standards

The Engineering Council is the UK's regulatory body for the engineering profession. It operates under a Royal Charter and is governed by a Board that represents UK Licensees as well as individuals from industries and sectors with an interest in the regulation of the profession.

This document is one in a series of closely related publications:

- **Registration Code of Practice (RCoP)**
- **The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)**
- **Information and Communications Technology Technician Standard (ICTTech Standard)**
- **Approval and Accreditation of Qualifications and Apprenticeships (AAQA)**
- **Accreditation of Higher Education Programmes (AHEP)**

The Engineering Council publishes these documents on behalf of the UK engineering profession, with whom they were developed and are kept under review. The relationship between these publications is:



The Royal Charter is an instrument of incorporation granted by the UK monarch. It confers independent legal personality on the Engineering Council and defines its objectives, constitution and powers to govern its own affairs.

The Bye-laws are the rules by which the Engineering Council regulates itself.

RCoP sets out the regulations that Licensees of the Engineering Council must adhere to when registering applicants, recognising programmes of learning and development, and undertaking related processes. These are expanded on in the four prescribed Standards below.

UK-SPEC and ICTTech Standard are prescribed Standards that, with reference to RCoP, set out the competence and commitment required for registration as CEng, IEng, EngTech and ICTTech.

AAQA and AHEP are prescribed Standards that, with reference to RCoP, set out the policy, context, rules and procedures for recognising learning and development programmes that help develop the competence and commitment set out in UK-SPEC and ICTTech Standard.

The Engineering Council also publishes policy statements, guidance for institutions and guidance for individuals. These, along with all the publications listed above, are available on the Engineering Council website: www.engc.org.uk

Contents

Foreword	4
Welcome	5
Introduction	7
Recognition – the purpose of approval or accreditation	11
The approval or accreditation process and decision making	16
Assessing learning outcomes	18
Assessing competence development programmes	18
How to apply for approval and/or accreditation	24
International recognition	26
Qualification and apprenticeship levels	28
Learning outcomes for approved and accredited programmes	29
Checklist of evidence for approval or accreditation	30
Defining characteristics of approved and accredited programmes	32
Learning outcomes – AHEP fourth edition and AAQA first edition	36
AAQA table of competences	52
Glossary	61

Foreword

Engineers and technicians respond to the needs of both society and business, solving complex challenges. Engineers and technicians work in the art and practice of changing our world, enhancing welfare, health and safety while paying due regard to the environment.

Society places great faith in the engineering profession, trusting its members to regulate themselves. By achieving and demonstrating professional competence and commitment for the purpose of registration, engineers and technicians demonstrate that they are worthy of that trust.

This document forms part of the Standard used by the UK engineering profession to assess the competence and commitment of individual engineers and technicians. It was developed collaboratively in consultation with engineers representing the breadth of the profession, from industry, academia and many different disciplines and specialisms.

Welcome

The purpose of AAQA

This Standard is for the Approval and Accreditation of Qualifications and Apprenticeships (AAQA). It sets out how Engineering Council Licensees recognise education and training programmes, through approval or accreditation, with reference to the:

- Process to be followed
- Learning outcomes and/or competence that must be demonstrated
- Requirements for approval and accreditation
- Evidence that Licensees should seek in order to confer approval or accreditation of a programme.

This Standard covers the approval and accreditation of programmes of learning (hereafter 'programmes') in relation to the levels set by the Engineering Council for professional registration as an engineer or technician.

Please note: though the Engineering Council sets the Standards for registration and for approval and accreditation (including this document), individuals are registered and programmes are approved or accredited by Licensees – engineering institutions licensed by the Engineering Council.

When reviewing a training or education programme against this document, Licensees assess whether that programme provides some, or all, of the knowledge, understanding and competence that underpins eventual registration in the following registration categories:

- Engineering Technician (EngTech)
- Information and Communications Technology Technician (ICTTech)
- Incorporated Engineer (IEng)
- Chartered Engineer (CEng)

Who AAQA is for

Many different groups will find this document useful. However, it has been written primarily for these audiences:

- Licensees undertaking approval and accreditation of qualifications, training programmes and apprenticeships
- Awarding organisations and other organisations that are responsible for the development and delivery of qualifications, training programmes and apprenticeships, including educational institutions and employers
- Individuals and employers who want to know whether or not they or their staff have the knowledge, understanding and competence required for registration, and what they need to do to meet the relevant standard.

A note on future changes to the education and skills landscape

Please note, this first edition of the Approval and Accreditation of Qualifications and Apprenticeships (AAQA) Standard has been written at a time when significant changes are anticipated with regards to the education and skills landscape.

The Accreditation of Higher Education Programmes (AHEP) Standard covers the accreditation of engineering education programmes delivered by Higher Education providers. This AAQA Standard covers the approval and accreditation of other qualifications, apprenticeships, training and competence development programmes offered in other settings, including Further Education and employment.

All the information included in this Standard is accurate at the time of publication (August 2020). AAQA will be reviewed two years after publication.

If in any doubt please visit the Engineering Council website for the most up to date information: www.engc.org.uk/standards-guidance

Key information

Throughout this document some key information, terms and crucial points will be picked out in boxed text like this to help navigation.

Licensee

Throughout this document the term 'Licensee' is used to describe the engineering institutions that have been licensed by the Engineering Council Board to assess individuals for professional registration. To become Licensees organisations must pass a rigorous process demonstrating, to the satisfaction of the Engineering Council Board, that they are competent to perform this task and to regulate the conduct of their members. Additionally, Licensees can be licensed to approve or accredit programmes of learning and competence development to specific standards.

Licensees are sometimes known informally as Professional Engineering Institutions, or PEIs. For a full and current list of Licensees please see: www.engc.org.uk/licensees

Glossary

At the end of AAQA there is a glossary that explains some of the terms we use.

Introduction

Engineering is concerned with the art and practice of changing the world we live in for the better. Driven by the needs of society, engineers strive to find solutions to complex challenges. They work to achieve useful and beneficial outcomes that enhance the welfare, health and safety of all while paying due regard to the environment.

While the objective of engineering professionalism is the public good, learners and apprentices choose engineering for a variety of reasons and a range of motivations. Learners and apprentices may include new entrants who are developing knowledge and skills straight out of school, experienced engineers or technicians looking to progress, or career changers. Whatever a person's motivations or the stage of their education and career, all learners and apprentices deserve an engineering education that is world-class and that develops industry-relevant skills.

Recognition of qualifications, apprenticeships, training and professional development programmes through either approval or accreditation by a Licensee helps to ensure that UK (and international) engineering education and development meets these needs as well as attracting students towards a career in the engineering profession. It demonstrates both nationally and internationally the high standard of UK engineering education and development and provides a basis for providers to review their programmes and to develop excellence in delivery and content.

The standards of competence and commitment that individuals must demonstrate to achieve professional registration are set out in two key documents:

- UK Standard for Professional Engineering Competence and Commitment (UK-SPEC):
www.engc.org.uk/ukspec
- Information and Communications Technology Technician Standard (ICTTech Standard):
www.engc.org.uk/icttechstandard

Reforms to the education and training landscape during the first two decades of the 21st century have led to significant changes in education provision, including significant growth in apprenticeships and other work-based programmes at higher levels. The position varies across the four UK nations and internationally, but there has been a shift towards much more employer and industry involvement in shaping provision. This means that programmes can now be presented in a broad range of formats and levels.

Programmes of learning include degrees, apprenticeships, national and vocational qualifications and other types of learning, including those led by employers and Licensees. Programmes that meet the high standards set by the Engineering Council may be recognised through approval or accreditation.

As set out in the diagram on page 3 there are two key Engineering Council Standards, AHEP and AAQA, which set out the overall requirements for programmes to be approved or accredited as delivering the level of knowledge and understanding for professional registration as a CEng, IEng, EngTech or ICTTech.

Degrees are addressed separately in the Accreditation of Higher Education Programmes (AHEP), and that document needs to be referred to if accrediting degrees that sit within degree apprenticeships (as they are known in England), higher level apprenticeships (Northern Ireland), graduate apprenticeships (Scotland) and higher apprenticeships (Wales).

Approval of a programme of learning or apprenticeship attests to its content. This means the overall design, depth and range of coverage, and validity and reliability of the assessment of the learner. Approval is used to recognise the underpinning knowledge and understanding covered by a programme, and can also be used to recognise the development of competence.

Accreditation of a qualification or programme confirms that its delivery is recognised at a specific site or sites. The accreditation process shall include a visit by the Licensee to the site of delivery. Where the same programme is delivered at multiple sites, the accrediting Licensee(s) must satisfy themselves that standards are met at each site for which accreditation will apply. This may require additional visits.

Accreditation incorporates Approval: if the delivery of a programme is accredited, approval of the underlying content or syllabus is implicit.

Approval signifies that a programme is subject to External Quality Assurance (EQA) and delivers the learning outcomes and/or competences specified in this Standard, in UK-SPEC or the ICT Technician Standard.

Accreditation signifies that a programme which is specific to a particular provider and location delivers the learning outcomes and/or competences specified in either:

- AAQA (this Standard)
- AHEP
- UK-SPEC, or
- the ICT*Tech* Standard

This Standard is written to support approval and accreditation of programmes delivered in any country. Approval and accreditation are carried out by Licensees on behalf of the Engineering Council. The scope of this Standard is broader than the previous Approval of Qualifications and Apprenticeships Handbook (AQAH) to enable approval and accreditation of a wider variety of programmes, including those designed to develop engineering competence.

Learning outcomes and competences are included for assessing programmes that sit between the established registration categories of EngTech and IEng. Successful completion of a programme at these levels may help individuals to achieve professional registration, although they will need to demonstrate further learning and/or competence if they wish to progress to IEng registration.

The aim is to offer approval and accreditation processes that are:

- Flexible and progressive, balancing maintenance of standards with support for innovation in delivery
- Inclusive, in so far as they can be applied across the diversity of programmes
- Time-neutral so that the processes remain current, even as the vocational qualifications and apprenticeship landscape changes
- Valued by all stakeholders as a useful tool in recognising programmes – particularly by Licensees and the engineering profession
- Used more frequently and consistently so that the broad and expanding range of engineering industry programmes can be included on a central, accessible Engineering Council database.

The approval and accreditation processes should be applicable to a broad range of delivery options which can be found across programmes as well as publicly and privately funded delivery. Assessments for an approval may be desk-based while assessments for accreditation normally involve a visit. This Standard applies to approval and accreditation of programmes for the purpose of supporting professional registration as an EngTech, ICTTech, IEng or CEng. This Standard also provides wider assurance that programmes are designed to meet standards set by and for the engineering profession.

In the case of a programme that is delivered in multiple locations, Licensees may approve the content of the programme and then go on to accredit the delivery, or Licensees may review both at

the same time. If one Licensee has approved the content, others may consider accrediting the delivery, but this is at the discretion of the Licensees as it is expected that they may set industry contextualised requirements.

We have tried to minimise reference to ‘levels’ in this Standard as qualification frameworks and associated levels vary between UK nations and internationally. Where levels are referred to, they are in line with the definitions of levels used in England, Wales and Northern Ireland at the time of writing. These are defined in Qualification and apprenticeship levels on page 28.

What counts as an Apprenticeship?

The term apprenticeship refers specifically to work-based programmes which have been approved by a statutory regulator (in England¹ this is the Institute for Apprenticeships and Technical Education, IfATE). It is recognised that in jurisdictions that do not have equivalent regulation, there may be programmes that are very similar to apprenticeships that could be approved or accredited as qualifications.

Apprenticeships may contain qualifications and, where they do, these qualifications may be considered for approval or accreditation in their own right and/or included in the evidence presented when an apprenticeship is considered for approval or accreditation. People completing an apprenticeship that contains a degree can only be considered to have an accredited degree if the degree itself is accredited in line with AHEP for the apprenticeship mode of delivery.

¹ In England, it is an offence to refer to anything other than a statutory, regulator-approved apprenticeship as an ‘apprenticeship’.

The QAA Characteristic Statements for Higher Education in Apprenticeships may also be a useful reference for anyone who is not familiar with degree apprenticeships. They can be found at: www.qaa.ac.uk/quality-code/supporting-resources

There is an expectation that apprenticeships support professional registration. This Standard introduces the option for approval and accreditation that recognises the extent to which apprenticeships and work-based qualifications contribute towards meeting the competence standards required for professional registration.

Wherever competence is mentioned in this Standard, this means professional competence, as in the competence required to register as CEng, IEng, EngTech or ICTTech, and related to the competences set out in UK-SPEC or the ICTTech Standard.

It is recognised that many work-based qualifications and apprenticeships will deliver some, or all, of the competence required to become a professionally registered engineer or technician. The processes set out in this Standard for approving or accrediting programmes that deliver competence may be applied against either:

- The full set of competences required for registration as set out in UK-SPEC or the ICTTech Standard.
- or
- A set of intermediate competences set out in this Standard which allow approval or accreditation of programmes that sit between the established registration categories EngTech and IEng.



Recognition – the purpose of approval or accreditation

Approval or accreditation by Licensees is a mark of assurance that the provision meets the standards set by the UK engineering profession. As such, it provides evidence to employers, learners, apprentices and others that the provision delivers some, or all, of the knowledge and understanding and/or competence required for professionally registered engineers and technicians.

Programmes can be approved or accredited as:

- **Delivering all of the underpinning knowledge and understanding required** for a professional registration title, via Licensee assessment, that the curriculum is designed to deliver all of the learning outcomes specified for the professional registration titles of EngTech, ICT*Tech*, IEng or CEng
- **Delivering some, but not all, of the underpinning knowledge and understanding required** for a professional registration title when the programmes address a set of learning outcomes that contribute towards the development of the underpinning knowledge and understanding for a professional registration title, either as further learning or requiring further learning
- **Delivering all of the competence required** for a professional registration title as set out in UK-SPEC (see the AAQA table of competences on pages 52–60) or the ICT*Tech* Standard
- **Delivering some, but not all, of the competence required** for a professional registration title, against the threshold competence set out in this Standard

The approval and accreditation processes provide structured mechanisms by which Licensees assess, evaluate and improve the quality of provision through an independent peer review process, and offer the opportunity for continuing dialogue between educational providers and the engineering profession.

What does approval or accreditation mean to an individual?

The Engineering Council recognises that some, or all, of the knowledge and understanding, and some, or all, of the competence required for registration may be acquired through a specific programme. All candidates for registration need to demonstrate their professional competence and commitment through a Professional Review. Individuals who successfully complete an approved or accredited programme that is listed on the Engineering Council's public database will find the process of achieving professional registration more straightforward.

For the latest information please see the Engineering Council website: www.engc.org.uk/courses

Participation on an approved or accredited programme will mean that the curriculum has been assessed by a Licensee as being designed to develop some, or all, of the knowledge and understanding, and in some cases some, or all, of the competence required for registration. It also means that the Licensee is satisfied in the quality of resources, delivery and assessment in all delivery locations.

To become registered as an EngTech, ICT*Tech*, IEng or CEng, an individual must be a member of a Licensee and have their competence and commitment assessed by the Licensee through Professional Review.

Approval or accreditation confirms the quality of an individual's experience across the whole programme which, in the case of accreditation, includes a specific location of a provider.

Individuals whose underpinning knowledge and understanding have been assessed, but who have not yet demonstrated the necessary competence for registration, may be permitted interim registration through a Licensee.

What is approval

Approval is a programme level review to confirm that a programme is designed to deliver and assess some, or all, of the knowledge and understanding and/or competence required for registration as an EngTech, ICT*Tech*, IEng, or CEng. For a programme to be considered for approval, an external agency (which may be a Licensee) must have quality assured the resources, delivery and assessment in all delivery locations. For example, approval of a programme which runs on a national basis with parallel training and assessment around the country.

Approval confirms that a programme meets some, or all, of the knowledge and understanding requirements and/or some, or all, of the competence commensurate with a level of professional registration. For example, many programmes in engineering may demonstrate the knowledge and understanding required for

EngTech registration and be subject to External Quality Assurance processes that Licensees are satisfied ensure the quality of delivery, resources and assessment.

Where programmes are subject to External Quality Assurance, the range of evidence considered is narrower in scope than that required for accreditation. A visit by a Licensee is not normally required, but this is at the discretion of the Licensee.

Can approval or accreditation be sought for degrees?

Degrees cannot be approved. This is because learning outcomes and assessment are set by an individual Higher Education Institution (HEI), and therefore degrees are not subject to programme level External Quality Assurance covering the quality of resources, delivery and assessment. In the case of apprenticeships that incorporate degrees, it is highly likely that the recognition process will include the established degree accreditation process set out in AHEP, as well as approval or accreditation of competence delivered in the workplace.

What is accreditation?

Accreditation by a Licensee involves an assessment at programme level (either confirmation that the programme is already approved or a formal review by the accreditation team) and a visit to review the quality of resources, delivery and assessment of a qualification or apprenticeship delivered in a specified location. A programme can be accredited without being subject to other External Quality Assurance processes. For example, many employer-specific programmes (sometimes known as company or in-house training schemes) in engineering may deliver the knowledge, understanding and competence required for IEng registration but not be subject to External Quality Assurance.

This would confirm that the programme meets some, or all, of the knowledge and understanding requirements and/or some, or all, of the competence commensurate with a level of professional registration with appropriate delivery, resource and assessment arrangements.

In some cases, a provider (eg college or employer) may agree with a Licensee to accredit delivery in a specific location for a programme that is, or has the potential to be, approved. For example, to enable confirmation that provision in a specific location delivers competence where approval of an apprenticeship delivered in multiple locations has only assessed knowledge and understanding.

The range of evidence considered during accreditation is wider in scope than that required for approval and a visit from the Licensee

is required. If a programme is already approved, a Licensee may consider evidence from that approval when they are assessing the learning outcomes or competence being delivered.

Accreditation of structured Initial Professional Development programmes

This AQAA Standard has been designed to cover the accreditation of structured Initial Professional Development (IPD) programmes. Where Licensees hold a licence from the Engineering Council to approve or accredit learning and development of different types, this includes structured IPD programmes. As each IPD programme is designed to meet the needs of the employer, they differ greatly. However, all accredited IPD programmes will have clear objectives which satisfy the standards of competence and commitment set out in UK-SPEC and the *ICTTech* Standard. As such, this standard can be applied accordingly.

For further details see the IPD policy statement on the Engineering Council website: www.engc.org.uk/ipd

Under what circumstances can approval or accreditation be sought?

Table 1 – Circumstances for approval or accreditation of learning outcomes or competence

	Programme is subject to External Quality Assurance that attests to the quality of facilities, delivery and assessment, and recognition is sought at content level	Programme is subject to External Quality Assurance that attests to the quality of facilities, delivery and assessment, and recognition is sought at delivery level	Programme is not subject to External Quality Assurance that attests to the quality of facilities, delivery and assessment, but recognition is sought at delivery level
Programme delivers:	Programme can be considered for:		
knowledge and understanding	approval against learning outcomes	accreditation against learning outcomes	accreditation against learning outcomes
knowledge, understanding and work-based competence	approval against competences and/or learning outcomes	accreditation against competences and/or learning outcomes	accreditation against competences and/or learning outcomes
work-based competence	approval against competences	accreditation against competences	accreditation against competences

Table 2 – Illustrative delivery arrangements and scope of recognition options

Examples of delivery arrangements and recognition that might be sought Please note: this list is intended as guidance to help identify the types of delivery arrangements that might be recognised. It is not intended to be an exhaustive list	Approval of delivering learning outcomes (partially or fully)	Approval of delivering competence development (partially or fully)	Accreditation of delivery arrangements (including resources, delivery, and assessment)
A nationally-set vocational qualification which is quality assured by an awarding organisation	✓	✓	
A degree accredited, by a Licensee, for use within an apprenticeship standard	✓		✓
The knowledge and understanding element of an apprenticeship	✓		
An apprenticeship approved by the national regulator for delivery nationwide	✓	✓	
An approved and industry-specific apprenticeship programme delivered in a central location (and possibly with several delivery hubs)	✓	✓	✓
Several Licensees working together to oversee an apprenticeship standard in terms of its delivery and content	✓	✓	✓
A training provider seeking accreditation for delivery of a specific qualification or apprenticeship at a specific location (where the programme has already been approved)			✓
An in-house company training programme which is used to develop staff towards professional registration	✓	✓	✓
A provider of specialist technical training in a specific area of engineering and technology	✓		✓
An industry-specific training programme designed to establish consistency across an industry sector	✓	✓	✓

The approval or accreditation process and decision making

Programmes may be approved or accredited as fully or partially meeting the knowledge and understanding and/or competence requirement for registration as an EngTech, ICTTech, IEng or CEng. It is not correct to use qualifying phrases such as 'provisional approval' and 'partial accreditation'.

The approval or accreditation process is conducted by Licensees within the Engineering Council's requirements, applying these to their own sector. Each Licensee must either specify details of its own criteria, or confirmation that its criteria are the same as those set out in this Standard. It must also publish procedures for accreditation and/or approval processes, in line with the Engineering Council's Registration Code of Practice (RCoP), and shall specify:

RCoP, paragraph 41

- the process of selecting and training accreditation or approval assessors
- the constitution of accreditation and approval panels;
 - ▶ there shall be a balance of academic and industry assessors
 - ▶ reasonable steps must be taken to avoid conflicts of interest
 - ▶ the panel shall include assessors with experience relevant to the appropriate registration category
- the form of the submission required from the training provider
- any charges which may be levied upon the training provider or awarding organisation
- the outline agendas for accreditation visits appropriate to the range of programmes

- the criteria against which the judgment will be made, including learning outcomes mapped to the generic statement of learning outcomes adopted by the Licensee [..]
- the processes by which further consultation with the training provider is carried out, decisions are made, and feedback is given to the provider concerned, and
- the processes by which appeals against decisions are considered, and the decisions notified to the Engineering Council.

RCoP, paragraph 42

In making a judgment, Licensees shall consider evidence from a range of indicators. These shall include:

- the learning outcomes of the programme
- the teaching and learning processes
- the assessment strategies employed
- the human, physical and material resources involved
- quality assurance arrangements
- feedback from meetings with students
- how previous accreditation or approval recommendations and requirements have been dealt with, and
- entry to the programme and how the cohort entry extremes will be supported.

In the case of degree accreditation, the evidence considered shall include the awarding institution's regulations regarding progression and the award of degrees.

In the case of approval of a formal qualification, they shall include:

- that it has clearly defined outcomes and is of an appropriate technical nature, and;
- that it has satisfactory quality assurance arrangements.

A checklist is provided on page 30 as guidance to the type of information that may be requested by the Licensee.

RCoP, paragraph 43

Any decision by a Licensee to recognise a programme of learning for which it is itself the awarding institution shall be submitted to Registration Standards Committee for agreement.

RCoP, paragraph 44

In considering applications for recognition, Licensees shall:

- recognise only programmes which provide awards granted on the basis of clearly defined learning outcomes
- ensure that the programme is at the appropriate level in the applicable UK qualifications framework or at an equivalent level within an appropriate international framework
- monitor the accuracy of the awarding institution's published information about the programme's accredited or approved status and registration
- visit the awarding institution as part of the assessment if necessary, and
- ensure that where recognition attests to acquisition of competence, the programme covers the relevant competence standards in UK-SPEC or AAQA.

Following approval or accreditation, the provider must notify the Licensee about any major changes made to an approved or accredited programme.

Figure 1, on pages 20–21, summarises the process for approving or accrediting a programme or apprenticeship which meets specified learning outcomes.

Figure 2, on pages 22–23, summarises the process for approving or accrediting a programme that delivers competence. The diagrams are indicative of overarching processes and Licensees will confirm their requirements in more detail.

The approval and accreditation processes are designed to be flexible so that they can be used in each of the following circumstances:

- Assessment of learning outcomes only
- Assessment of the development of competence only
- Assessment of both learning outcomes and the development of competence

In the latter case: the Licensee may specify a combined process or the processes in both diagrams may need to be completed independently.

Given the breadth and level of programmes covered by the approval and accreditation processes, it should be noted that there may be a range of outcomes.

RCOP, paragraph 46

The outcome of a recognition assessment of a programme (other than structured IPD) shall be one of the following:

- The qualification or programme of learning is accredited or approved as fully meeting the learning outcomes at the requisite level.
- The qualification or programme of learning is accredited or approved as partially meeting the learning outcomes at the requisite level.
 - ▶ Either of the above, and additionally that the programme fully or partially meets the competence requirement for the relevant category of UK-SPEC.
 - ▶ Either of the above, provided specified constraints are met and/or specified modifications are made within a set timetable. Licensees shall notify the Engineering Council about any constraints which would restrict the eligibility of award holders.
- The qualification or programme of learning is neither accredited nor approved.

As these processes develop, a range of guidance examples may be provided to illustrate how these processes should be applied. See the Engineering Council's Partner Portal for the latest information: <http://partner.engc.org.uk/institution-guidance>

Assessing learning outcomes

Learning outcomes are shown from page 29 of this document. 'Approval and accreditation against learning outcomes' means the process of approving or accrediting programmes as meeting the knowledge and understanding requirements for a professional registration title.

Approval and accreditation of programmes may be against learning outcomes set at the following threshold levels:

- Level 3 – EngTech
- Level 4 – Intermediate; exceeds EngTech threshold
- Level 5 – Intermediate; further development required
- Level 6 – IEng
- Level 7 – CEng

Programmes that are approved or accredited at Level 4 or Level 5 may be treated as either programmes that meet the EngTech requirements in full or programmes that partially fulfill the requirements for IEng, with further learning required.

This form of approval or accreditation will contribute to learners' further learning and development and help to identify the further professional development needed to reach the relevant title for registration.

Assessing competence development programmes

'Approval and accreditation against competences' means the process of approving or accrediting programmes as developing and assessing some, or all, of the competences required for registration. A provider may request approval or accreditation of a programme against:

- the full set of competences required for EngTech, ICT*Tech*, IEng or CEng registration (as set out in UK-SPEC),
- the full set of competences required for ICT*Tech* (as set out in the ICT*Tech* Standard), or
- the intermediate set of competences set out in the AAQA table of competences on pages 52–60.

What are intermediate competences?

Intermediate competences are specified because it is recognised that many programmes sit between the level of EngTech and IEng. If approval or accreditation is confirmed, the Licensee and provider must make clear in communications whether this meets the requirements for UK-SPEC (EngTech, IEng or CEng), or *ICTTech* competences, partially or fully.

Competences for the various levels are shown in the AAQA table of competences on pages 52–60. Full competences for *ICTTech* can be found in the *ICTTech* Standard, while for EngTech, IEng and CEng these are in UK-SPEC.

This table also shows intermediate competences for programmes at a level between EngTech and IEng. It specifies which competences applicants might be expected to demonstrate.

This Standard recognises the development of competence against a range of UK-SPEC competences. In some cases, the development of competences will be clearly matched against a title (EngTech, *ICTTech*, IEng or CEng) as defined in UK-SPEC. However, there are likely to be programmes that develop competence at a level between the titles of EngTech and IEng.

Therefore, approval and accreditation processes have been designed to support approval or accreditation of competence against either:

- Competences as presented on pages 52–60, (see UK-SPEC for full EngTech, IEng or CEng competences):
 - ▶ Level 3 – EngTech
 - ▶ Level 4 – Intermediate; exceeds EngTech threshold
 - ▶ Level 5 – Intermediate; further development required
 - ▶ Level 6 – IEng
 - ▶ Level 7 – CEng
- or
- The full *ICTTech* competences, as presented in the *ICTTech* Standard

It is anticipated that many programmes will be approved or accredited against the Level 4 or Level 5 competences. This approval or accreditation will support candidates' additional learning and development needs, enabling them to identify the professional development needed to reach the relevant title for professional registration.

Figure 1

Providers are encouraged to discuss seeking approval or accreditation with the Licensee as soon as possible, and throughout the process.

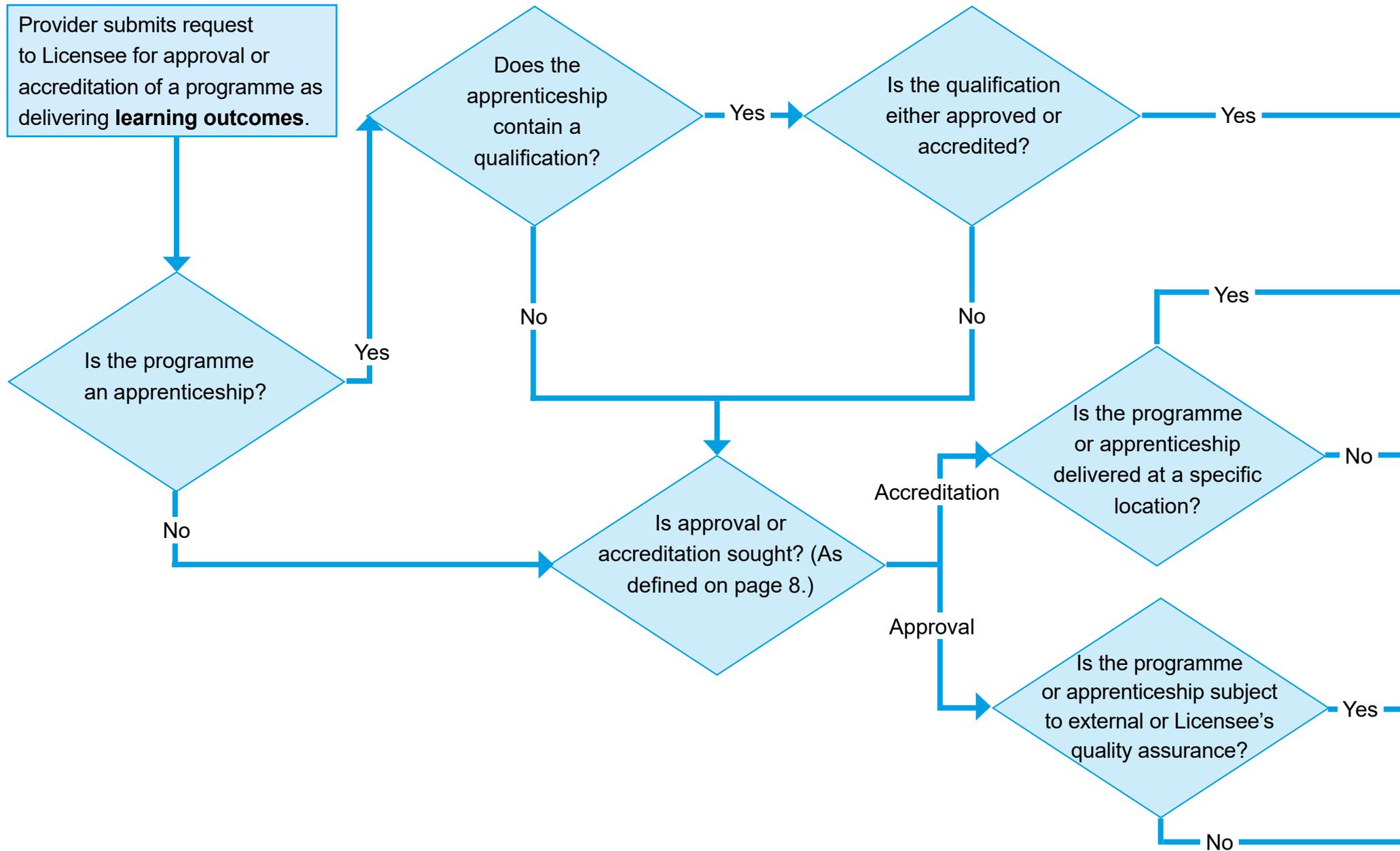


Figure 1 continued

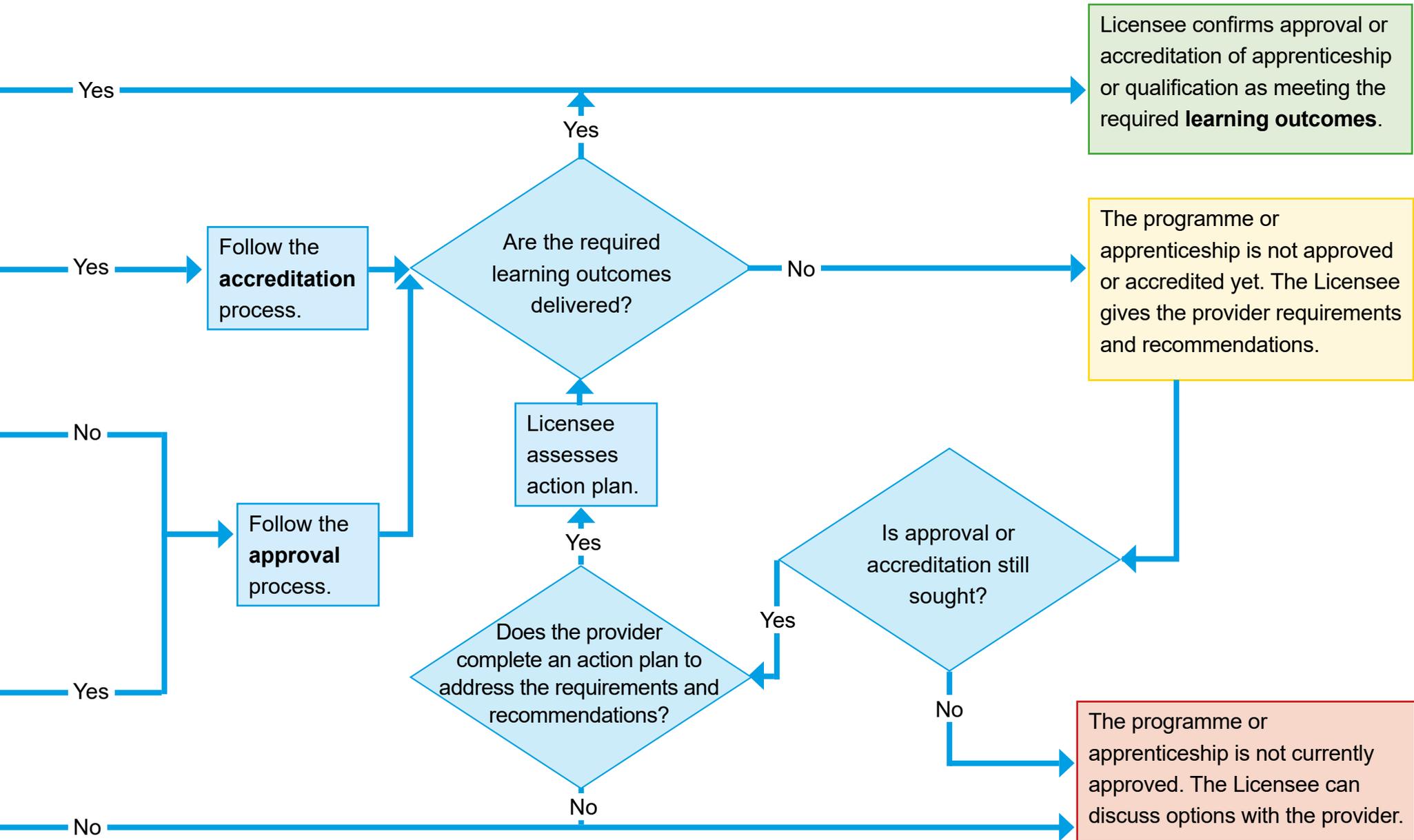


Figure 2

Providers are encouraged to discuss seeking approval or accreditation with the Licensee as soon as possible, and throughout the process.

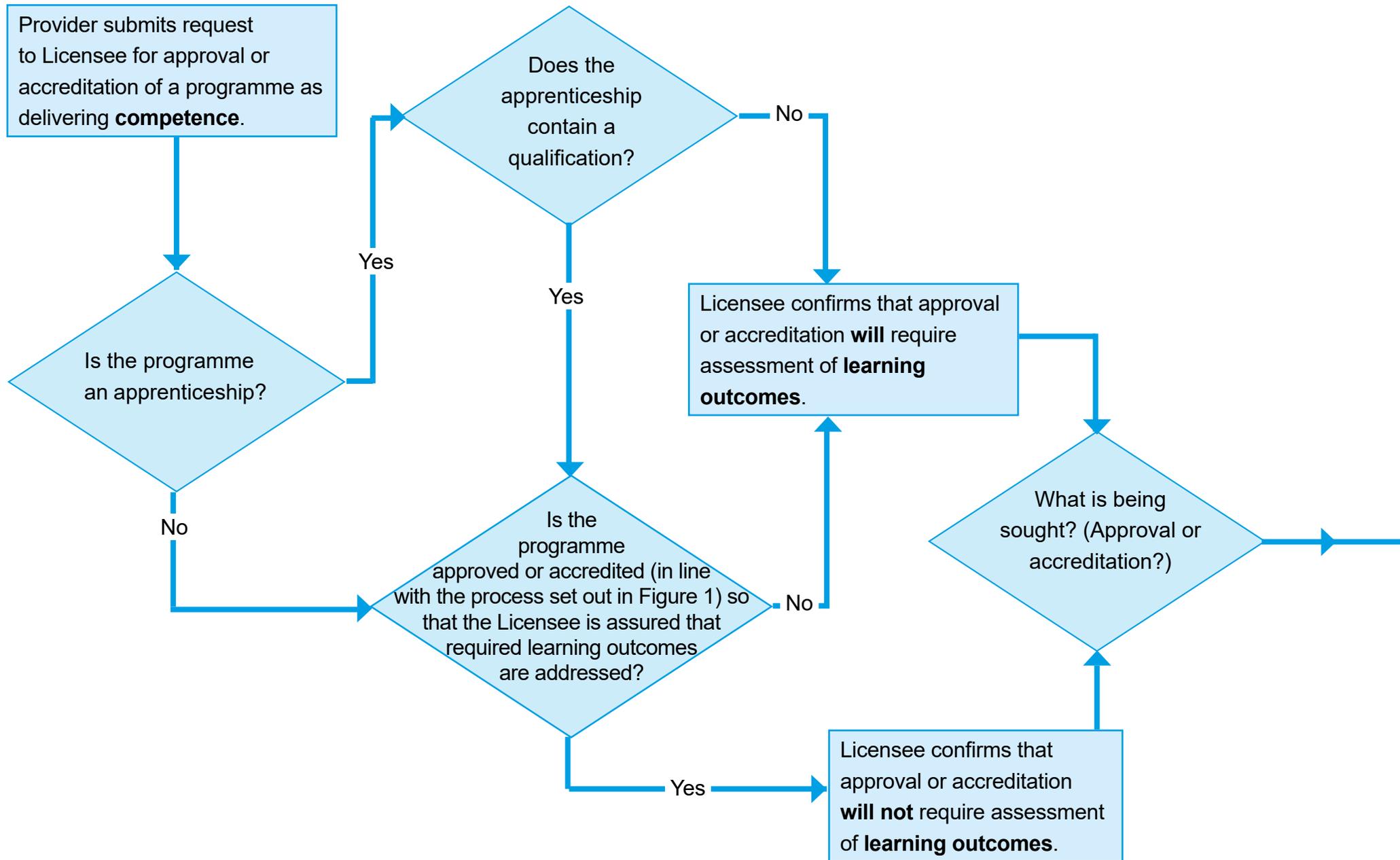
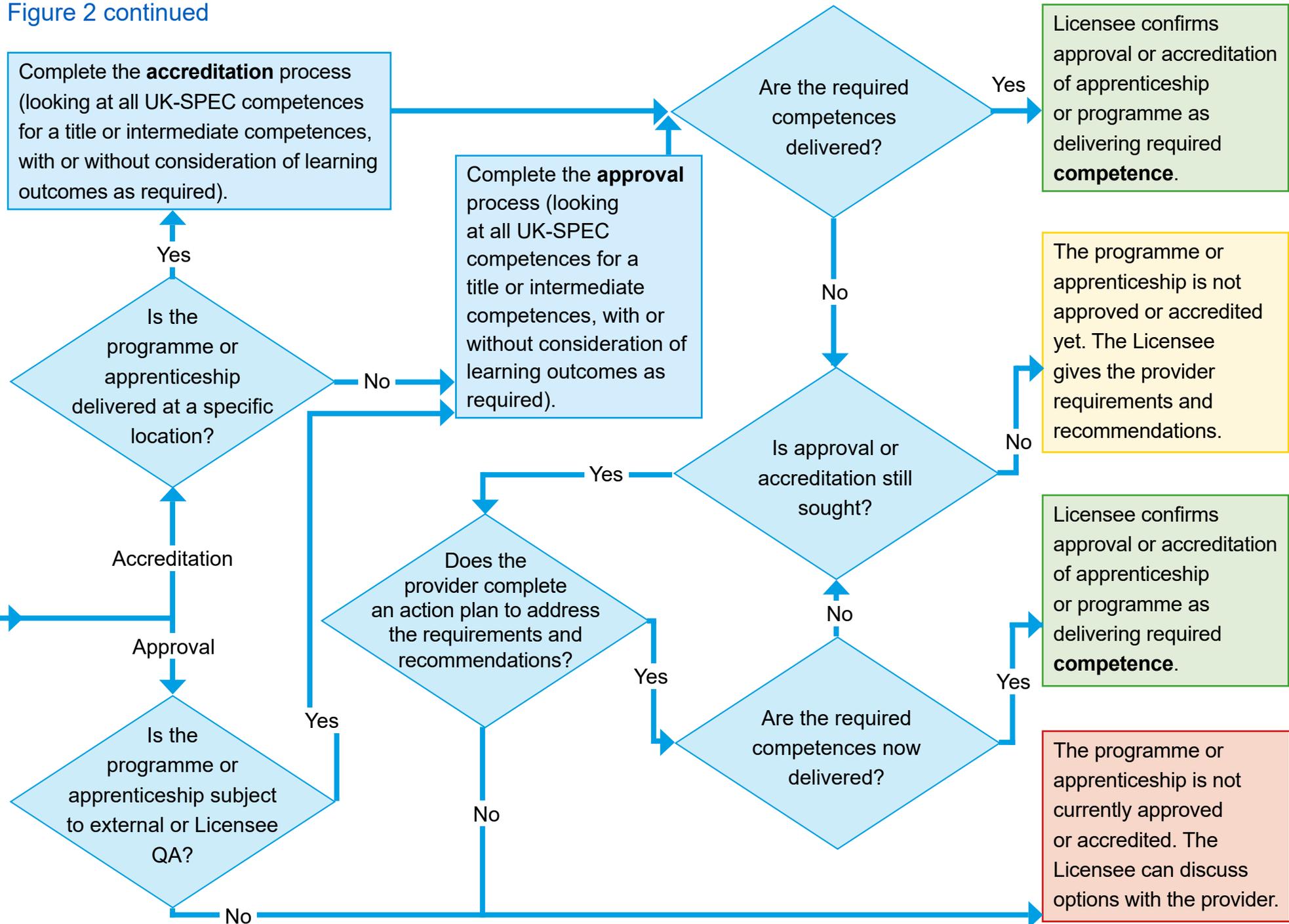


Figure 2 continued



How to apply for approval and/or accreditation

Licensees will set their own requirements for a submission for the approval or accreditation of a programme. These requirements will include:

- Name of the programme
- Unique identifier for the programme (where available)
- Name and contact details for the provider applying for approval or accreditation
- Whether the programme is seeking approval or accreditation
- Confirmation of whether the programme has already been approved or accredited (if it has: the record number on the Engineering Council database must be included)
- Level of the programme on the appropriate qualifications framework (if the programme is not on a framework, the Licensee must determine the level) and the title or the threshold which approval or accreditation is against
- Whether the approval or accreditation is sought for:
 - ▶ knowledge and understanding only;
 - ▶ knowledge, understanding and competence; or
 - ▶ competence only
- The learning outcomes of the programme
- Evidence to support appropriate technical depth and range of coverage
- Evidence of mapping to appropriate learning outcomes and/or competences
- The assessment methods employed
- Quality Assurance arrangements, such as third party or Licensee accreditation and regulation

The Licensee may request an initial brief submission covering basic details that it will use to determine if the provision being put forward is likely to meet its requirements for approval or accreditation. This may also include whether this could cover knowledge and understanding only; knowledge, understanding and competence; or competence only. Once satisfied of this, the Licensee will agree timing and appoint an assessor panel.

The decision about whether or not to approve or accredit a programme will be made on the basis of the programme delivering the competences and/or learning outcomes which the Licensee has specified. These are derived from the generic learning outcomes, set out on pages 36–51, that apply to all approved or accredited programmes.

Which Licensee?

A provider (eg college, employer or awarding organisation) that believes it has a programme that would benefit from approval or accreditation on behalf of the Engineering Council should approach the relevant Licensee, which holds a licence to approve or accredit, and apply for recognition.

The decision about which Licensee to contact will normally be straightforward, dictated by the programme's specialism or underlying content. In some cases, a provider may request approval or accreditation from more than one Licensee.

For a current list of Licensees please see the Engineering Council website: www.engc.org.uk/licensees

Encouraging dialogue

Providers are encouraged to talk to Licensees early, including to seek guidance when proposing a new programme, and to maintain dialogue up to and beyond approval or accreditation.

Licensees can advise on:

- Whether recognition is appropriate for the programme
- Whether approval or accreditation would be the most appropriate form of recognition
- Whether the Licensee has contextualised (specified or expanded on) the Engineering Council Standards for their own specialism.

Dialogue prior to, or after, a submission for approval or accreditation may result in agreement to delay, withdraw or amend the approval or accreditation sought (although, for ease of presentation, this is not shown in Figures 1 or 2).

Providers must notify Licensees of any significant changes to approved or accredited programmes and are encouraged to discuss any proposed changes in advance.

What happens once approval or accreditation is granted?

Once approved or accredited, a programme is submitted by the Licensee to the Engineering Council for inclusion in the list of approved and accredited programmes. This is available at: www.engc.org.uk/courses

Approval or accreditation confirms that a programme meets the Standards set by the Engineering Council, as well as any industry contextual requirements set by the Licensee. Licensees make their own decisions as to whether to (and how to) recognise approval or accreditation conferred by another Licensee.

Approval or accreditation is normally given for up to five years. However, approval or accreditation may be for a shorter period, especially in the case of new programmes where it is necessary to monitor outputs. Re-accreditation or re-approval usually follow the same processes as the original approval or accreditation, although the process may be adapted if the Engineering Council's Standards or regulations have changed in the intervening time. Extension and backdating of recognition may be permitted in certain circumstances and for limited periods.

It is the responsibility of individual Licensees to provide feedback to providers on the outcome of the approval or accreditation process.

Providers must ensure that the information they provide about the approval or accreditation status of their qualifications and apprenticeships, and the relationship to registration, is accurate.

Programmes approved or accredited as requiring further learning

Programmes may be approved or accredited as partially meeting the requirements for professional registration. In these cases the applicant will need to demonstrate additional learning and/or

competence development to demonstrate that they meet the requirements to achieve professional registration. This can occur when the programme's approval or accreditation is:

- Against learning outcomes and/or competences at a level lower than the professional title sought
- As further learning or competence development.

International recognition

In an increasingly global market for engineering education, the opportunity to have a programme recognised under an international accord offers potential benefits to providers including:

- The programme is more attractive to students who value an internationally recognised qualification, particularly those who may want to work in countries where 'engineer' is a legally protected title
- Assurance that a degree meets international standards
- Graduates may be more employable, helping with league tables.

The Engineering Council is a signatory to the following international accords:

- The EUR-ACE® Accord (EUR-ACE®)
- The Washington Accord (WA)
- The Sydney Accord (SA)
- The Dublin Accord (DA)

The EUR-ACE®, Washington and Sydney Accords provide a mechanism for mutual recognition, by signatory countries, of accredited degrees. The Dublin Accord supports mutual recognition of approved or accredited qualifications and programmes.

The registration process may be easier for individuals with approved or accredited learning or competence. However other learning and evidence of competence, whether formal or informal, can be assessed by Licensees who can guide individuals on their registration processes.

The Washington, Sydney and Dublin Accords apply to approval or accreditation, by a signatory, of programmes delivered by education institutions within the national or territorial jurisdiction of that signatory. In the case of the Engineering Council, this recognition applies to programmes approved or accredited for providers in England, Scotland, Wales and Northern Ireland only.

Note: international recognition only applies to programmes (or combinations of programmes) that are approved or accredited against all the learning outcomes or full (UK-SPEC or ICTTech) competences for a relevant professional title.

For further details, including links to lists of current signatories, see: www.engc.org.uk/international

Licensees accrediting overseas qualifications should use the AHEP and AAQA learning outcomes in conjunction with the national qualifications framework of the country concerned. In the absence of an academic qualifications framework, the level used should be determined by the responsible authority. Normally this will be a government department or agency. The UK-NARIC evaluation of the qualification level may also be used.

For the purposes of the recognition of non-UK qualifications, these two reference points are applied. The guiding principle is that a qualification should be recognised at the academic level indicated by the provider, or by the responsible authority for the provider's home country, unless there is significant evidence to support a different evaluation.

The EUR-ACE® Accord

The EUR-ACE® Accord, administered by the European Network for Accreditation of Engineering Education (ENAE), allows educational institutions with accredited degrees delivering the equivalent of at least 180 ECTS credits to demonstrate the international standing of these awards. Programmes that carry the EUR-ACE® label are recognised within the Qualifications Framework of the European Higher Education Area (QF-EHEA). Award of the EUR-ACE® label shows that a programme is recognised by ENAE as a first cycle degree (Bachelor degree) or second cycle degree such as an Integrated Masters (MEng), or MSc.

For further details see: www.engc.org.uk/eurace

The Washington Accord

The Washington Accord was first signed in 1989. It recognises that professional engineering education programmes accredited by the signatories deliver outcomes that meet or exceed the Washington Accord graduate attributes (learning outcomes). In the UK, Washington Accord programmes are degrees accredited for the purpose of CEng registration.

For further details see: www.ieagreements.org/washington

The Sydney Accord

The Sydney Accord was first signed in 2001. It recognises that engineering technologist education programmes accredited by the signatories deliver outcomes that meet or exceed the Sydney Accord graduate attributes (learning outcomes). In the UK, Sydney Accord programmes are degrees accredited for the purpose of IEng registration.

For further details see: www.ieagreements.org/sydney

The Dublin Accord

The Dublin Accord was first signed in 2002. It recognises that the educational base for EngTech approved or accredited by the signatories delivers outcomes that meet or exceed the Dublin Accord graduate attributes (learning outcomes). In the UK, Dublin Accord programmes are ones approved for the purpose of EngTech or ICTTech registration.

For further details see: www.ieagreements.org/dublin

Qualification and apprenticeship levels

Where this table refers to levels, they are in line with the definitions of levels used in England, Wales and Northern Ireland.

The following is based on current definitions from the UK government and the Scottish Credit and Qualifications Framework (SCQF).

Note: As comparison of international qualifications depends on the jurisdiction, there is not always a perfect alignment. Details of European qualification levels are available at:

europa.eu/europass/en/compare

Some jurisdictions have mapped qualifications to the International Standard Classification of Education (ISCED): uis.unesco.org/en/topic/international-standard-classification-education-isced

Levels in England, Wales and Northern Ireland	Example qualifications and apprenticeships – England, Wales and Northern Ireland	Example qualifications – UK wide	Example qualifications and apprenticeships – Scotland	SCQF levels
8		Doctoral degree (eg PhD, MPhil)	Professional apprenticeship	12
7	Degree apprenticeship, Higher apprenticeship	Masters degree (eg MEng, Integrated Masters degree)	Professional apprenticeship, Graduate apprenticeship	11
6	Degree apprenticeship, Higher apprenticeship	Honours degree	Professional apprenticeship, Graduate apprenticeship	10
		Bachelor degree without honours	Graduate apprenticeship, Technical apprenticeship	9
5	Foundation degree, Higher apprenticeship	Higher National Diploma	Higher apprenticeship, Technical apprenticeship	8
4	Higher apprenticeship	Higher National Certificate	Modern apprenticeship, Advanced higher	7
3	Apprenticeship, T level, A level		Modern apprenticeship, Foundation apprenticeship, Higher	6

Learning outcomes for approved and accredited programmes

Approved or accredited programmes provide some, or all, of the underpinning knowledge and understanding required for EngTech, ICT*Tech*, IEng and CEng registration.

The learning outcomes need to be read in the context of the generic statements of competence and commitment for EngTech, IEng and CEng in UK-SPEC and for ICT*Tech* in the ICT*Tech* Standard.

Note: Though different learning outcomes are listed, this does not imply there should be a compartmentalised or linear approach to learning and teaching. Throughout each programme, different learning outcomes are likely to be delivered concurrently through, for example, project work. The process of approval or accreditation will include an assessment of whether learners or apprentices are achieving these outcomes.

Each approved or accredited programme provides a solid foundation in the principles of engineering relevant to the discipline specialism. The five key areas of learning are:

- Science and mathematics
- Engineering analysis
- Design and innovation
- The engineer and society
- Engineering practice

These integrate what were referred to in the AQAH, Approval of Qualifications and Apprenticeships Handbook, as 'additional general skills'.

The learning outcomes used during approval and accreditation are derived from the generic learning outcomes set out on pages 36–51, along with the characteristics that define approved and accredited programmes.

Competences developed within approved and accredited programmes

Programmes may be approved or accredited as delivering all of the required competences for EngTech, ICT*Tech*, IEng and CEng registration, or intermediate competences between EngTech and IEng. If approval or accreditation is confirmed, the Licensee and provider must make clear in communications whether this meets the requirements for UK-SPEC competences (EngTech, IEng or CEng), or the ICT*Tech* competences, partially or fully.

The competences used during approval and accreditation are shown in the AAQA table of competences set out on pages 52–60.

The intermediate competences included in the table on pages 52–60 need to be read in the context of the generic statements of competence and commitment for EngTech, IEng and CEng in UK-SPEC or the ICT*Tech* Standard.

Note: these should be referred to by Licensees looking to accredit IPD schemes.

Checklist of evidence for approval or accreditation

When considering a programme of learning for approval or accreditation, Licensees will look for evidence in line with their own requirements and the requirements set out in RCoP, as detailed on pages 16–18. Such evidence is likely to include some, or all, of the components listed below – as applicable for the type of programme and recognition:

Overall design

- Title of the programme
- Purpose of the programme
- Programme competences and/or learning outcomes delivered

Depth and range of coverage

- Size of the programme, eg:
 - ▶ Total Qualification Time (TQT)
 - ▶ Guided Learning Hours (GLH)
 - ▶ Number of units or credits
 - ▶ Minimum duration
- Programme specification and structure
- The level of the programme
- Syllabuses and module descriptors
- Project list and project handbook (if applicable)
- Programme logbook (if applicable)

Validity of assessment

- Methods of assessment
- How learner/apprentice work is assessed and moderated
- How learner/apprentice work is examined, assessed and moderated

- Progression details
- Classification of award or programme eg pass, merit, distinction

Reliability of assessment

- Reports from regulatory agencies
- Method of awarding organisation accreditation method
- Apprenticeship regulatory compliance eg Institute for Apprenticeships and Technical Education (IfATE) requirements (if applicable)
- Reports and related responses from external examiners or verifiers (if applicable)
- Internal programme review reports (if applicable)

Other supporting evidence may be available from the applicant organisation such as:

- Its own accreditation process for delivery
- Information about how the competence of providers and staff is assessed
- How samples of learner/apprentice work are assessed and moderated
- How examination papers and module solutions are assessed and moderated
- Internal programme review reports
- Facilities for learners
- Future plans and intentions



Defining characteristics of approved and accredited programmes

National Certificates/Diplomas and equivalent qualifications approved or accredited as fully meeting the academic requirement for EngTech registration

ISCED: Level 3
EQF: Level 4

National Certificates/Diplomas or equivalent qualifications either approved or accredited for the purpose of EngTech registration will have an emphasis on the practical application of current and developing technology.

An individual who has completed a National Certificate/Diploma or equivalent qualification or apprenticeship must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve well-defined programmes of work and associated problems using established principles and techniques.

Higher National Certificates and equivalent qualifications approved or accredited as meeting the educational requirement for progression towards IEng registration (further learning to Bachelors level will be required)

ISCED: Level 5
EQF: Level 4/5

Higher National Certificates or equivalent qualifications either approved or accredited for the purpose of progression towards IEng registration will have an emphasis on the practical application of current and developing technology.

An individual who has completed a Higher National Certificate or equivalent qualification or apprenticeship must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve well-defined programmes of work and associated problems using established principles and techniques.

Foundation degrees and equivalent qualifications accredited as partially meeting the educational requirement for IEng registration (further learning to Bachelors level will be required)

ISCED: Level 5
EQF: Level 5

Foundation degrees or equivalent qualifications accredited for the purpose of IEng registration will have an emphasis on the applications of current and developing technology.

An individual who has completed a Foundation degree or equivalent qualification must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve broadly-defined problems using established principles and techniques.

With an appreciation of professional engineering practice and ethics, graduates will be able to apply their knowledge and skills to new situations.

Bachelors degrees and Bachelors (Honours) degrees accredited for IEng registration (including Top-up degrees)

ISCED: Level 6
EQF: Level 6

Bachelors degrees and Bachelors (Honours) degrees accredited for the purpose of IEng registration will have an emphasis on the applications of current and developing technology.

Graduates from a Bachelors degree or Bachelors (Honours) degree must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve broadly-defined problems using established principles and techniques. Some of the knowledge will be informed by current developments in the subject of study.

With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design and deliver products, systems and processes to meet defined needs using current technology.

Bachelors (Honours) degrees accredited as partially meeting the educational requirement for CEng registration (further learning to Masters level will be required)

ISCED: Level 6
EQF: Level 6

Bachelors (Honours) degrees accredited for the purpose of CEng registration will have an emphasis on developing solutions to engineering problems using new or existing technologies, through innovation, creativity and change.

Graduates from a Bachelors (Honours) degree must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Some of the knowledge will be at the forefront of the particular subject of study.

Graduates will be able to select and apply quantitative and computational analysis techniques, recognising the limitations of the methods employed.

With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design and deliver new products or services to meet defined needs using new or existing technologies.

Masters degrees other than the Integrated Masters (MEng) (accredited as further learning to Masters level, partially meeting the educational requirement for CEng)

ISCED: Level 7
EQF: Level 7

Masters degrees, other than the Integrated Masters accredited as further learning to Masters level for the purpose of CEng registration, vary in nature. Some offer the chance to study, in greater depth, particular aspects or applications of a broader discipline in which the graduate holds an Honours degree at Bachelors level. Others bring together different engineering disciplines or subdisciplines in the study of a particular topic, or engineering application. These programmes should provide a foundation for leadership and innovative engineering practice.

Graduates from a Masters degree other than the Integrated Masters must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Much of the knowledge will be at the forefront of the particular subject of study.

Graduates will be able to select and apply quantitative and computational analysis techniques in the absence of complete data, discussing the limitations of the methods employed.

With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design, deliver and evaluate innovative new products or services to meet defined needs, using new or existing technologies.

Integrated Masters (MEng) degrees accredited for CEng registration

ISCED: Level 7

EQF: Level 7

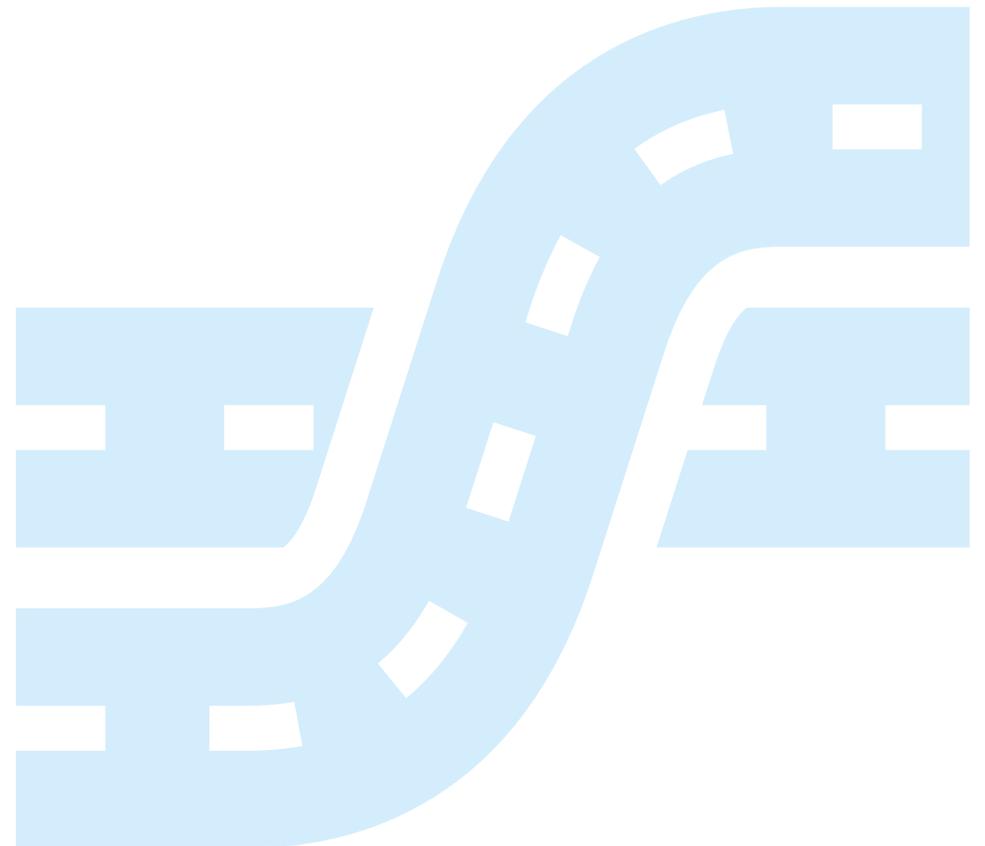
Integrated Masters degrees (often denoted MEng) accredited for the purpose of CEng registration will have an emphasis on developing solutions to problems, using new or existing technologies, through innovation, creativity and change.

The Integrated Masters will go beyond the outcomes of accredited Bachelors (Honours) degrees to provide a greater range and depth of specialist knowledge, within an authentic environment, as well as a broader and more general academic base. These programmes should provide a foundation for leadership and innovative engineering practice.

Graduates from an Integrated Masters degree must achieve the prescribed learning outcomes and will possess a broad and coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Much of the knowledge will be at the forefront of the particular subject of study.

Graduates will be able to select and apply quantitative and computational analysis techniques in the absence of complete data, discussing the limitations of the methods employed.

With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design, deliver and evaluate innovative new products or services to meet defined needs using new or existing technologies.



Learning outcomes – AHEP fourth edition and AAQA first edition

Preamble

1. **Well-defined problems** involve several factors, but with few of these exerting conflicting constraints, and can be solved through the standardised application of engineering science.
2. **Broadly-defined problems** involve a variety of factors which may impose conflicting constraints, but can be solved by the application of engineering science and well-proven analysis techniques.
3. **Complex problems** have no obvious solution and may involve wide-ranging or conflicting technical issues and/or user needs that can be addressed through creativity and the resourceful application of engineering science.
4. These learning outcomes are threshold standards and should be interpreted in the context of a particular disciplinary or multidisciplinary engineering practice, and the level of study.
5. An individual who has completed an approved or accredited programme must meet all of the identified learning outcomes, however student learning hours are likely to vary between the five key areas of learning. See page 29.
6. It is recognised that an approved or accredited programme may develop learning outcome(s) beyond the threshold level, however such additional learning is not prescribed or required for academic accreditation.
7. The learning outcomes in this document may be a useful reference point when assessing the knowledge and understanding of an individual who does not hold an accredited degree (for example those individuals following sector specific apprenticeships, in-company training programmes, IPD Schemes, etc.).

8. The Engineering Council defines security as ‘the state of relative freedom from threat or harm caused by deliberate, unwanted, hostile or malicious acts. It operates on a number of levels ranging from national security issues to countering crime’. See the guidance note at: www.engc.org.uk/security

The learning outcomes can also be downloaded in an A3 table from the Engineering Council website: www.engc.org.uk/aaqa

Engineering Technician

Area of learning	Engineering Technician	
	National Certificates and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for EngTech registration	Higher National Certificates and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for EngTech registration and partially meeting the academic requirement for IEng registration
On successful completion of an approved or accredited programme, an individual will be able to:		
Science and mathematics		
The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.		
Science, mathematics and engineering principles	T1. Apply knowledge of mathematics, statistics, natural science and engineering principles to well-defined problems.	H1. Apply knowledge of mathematics, statistics, natural science and engineering principles to well-defined problems.
Engineering analysis		
Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete.		
Problem analysis	T2. Analyse well-defined problems reaching substantiated conclusions.	H2. Analyse well-defined problems reaching substantiated conclusions.
Analytical tools and techniques	T3. Use appropriate computational and analytical techniques to solve well-defined problems.	H3. Use appropriate computational and analytical techniques to solve well-defined problems recognising the limitations of the techniques employed.
Technical literature	T4. Select and use technical literature and other sources of information to address well-defined problems.	H4. Select and use technical literature and other sources of information to address well-defined problems.

Engineering Technician (continued)		
Area of learning	National Certificates and equivalents (continued)	Higher National Certificates and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:		
Design and innovation		
Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.		
Design	T5. Contribute to design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet business, customer or user needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards.	H5. Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet business, customer or user needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards.
Integrated/systems approach	T6. Apply a systematic approach to the solution of well-defined problems.	H6. Apply a systematic approach to the solution of well-defined problems.

Engineering Technician (continued)

Area of learning	Engineering Technician (continued)	
	National Certificates and equivalents (continued)	Higher National Certificates and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:		
<p>The Engineer and Society</p> <p>Engineering activity can have a significant societal impact and engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.</p>		
Sustainability	T7. Evaluate the environmental and societal impact of solutions to well-defined problems.	H7. Evaluate the environmental and societal impact of solutions to well-defined problems.
Ethics	T8. Apply ethical principles and recognise the need for engineers to exercise their responsibilities in an ethical manner and in line with professional codes of conduct.	H8. Apply ethical principles and recognise the need for engineers to exercise their responsibilities in an ethical manner and in line with professional codes of conduct.
Risk	T9. Identify, evaluate and mitigate risks (the effects of uncertainty) specific to their field of activity.	H9. Identify, evaluate and mitigate risks (the effects of uncertainty) associated with a well-defined project or activity.
Security	T10. Adopt a holistic and proportionate approach to the mitigation of security risks.	H10. Adopt a holistic and proportionate approach to the mitigation of security risks.
Equality, diversity and inclusion	T11. Recognise the importance of equality, diversity and inclusion in the workplace.	H11. Recognise the importance of equality, diversity and inclusion in the workplace.

Area of Learning	Engineering Technician (continued)	
	National Certificates and equivalents (continued)	Higher National Certificates and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:		
Engineering practice		
The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.		
Practical and workshop skills	T12. Use practical laboratory and workshop skills to investigate well-defined problems.	H12. Use practical laboratory and workshop skills to investigate well-defined problems.
Materials, equipment, technologies and processes	T13. Select and apply appropriate materials, equipment, engineering technologies and processes to plan and undertake well-defined programmes of work.	H13. Select and apply appropriate materials, equipment, engineering technologies and processes to plan and undertake well-defined programmes of work.
Quality management	T14. Recognise the need for quality management systems and continuous improvement in the context of well-defined problems.	H14. Recognise the need for quality management systems and continuous improvement in the context of well-defined problems.
Engineering and project management	T15. Demonstrate awareness of engineering management principles, commercial context and project management.	H15. Apply knowledge of engineering management principles, commercial context and project management to well-defined problems.
Teamwork	T16. Function effectively as an individual and as a member of a team.	H16. Function effectively as an individual and as a member of a team.
Communication	T17. Communicate effectively with technical and non-technical audiences.	H17. Communicate effectively with technical and non-technical audiences.
Lifelong learning	T18. Plan and record self-learning and improve performance, as the foundation for lifelong learning/CPD.	H18. Plan and record self-learning and improve performance, as the foundation for lifelong learning/CPD.

Area of learning	Incorporated Engineer		
	Foundation degrees, Higher National Diplomas and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for EngTech registration and partially meeting the academic requirement for IEng registration	Bachelors Top-up degrees and equivalent qualifications and apprenticeships approved or accredited as meeting the requirement for further learning for IEng registration	Bachelors degrees and Bachelors (Honours) and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for IEng registration
On successful completion of an approved or accredited programme, an individual will be able to:			
Science and mathematics			
The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.			
Science, mathematics and engineering principles	F1. Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems.	B1. Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.	B1. Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study.

Area of Learning	Incorporated Engineer (continued)		
	Foundation degrees, Higher National Diplomas and equivalents (continued)	Bachelors Top-up degrees and equivalents (continued)	Bachelors degrees and Bachelors (Honours) and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Engineering analysis			
Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete.			
Problem analysis	F2. Analyse broadly-defined problems reaching substantiated conclusions.	B2. Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.	B2. Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.
Analytical tools and techniques	F3. Use appropriate computational and analytical techniques to model broadly-defined problems.	B3. Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.	B3. Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed.
Technical literature	F4. Select and use technical literature and other sources of information to address broadly-defined problems.	B4. Select and evaluate technical literature and other sources of information to address broadly-defined problems.	B4. Select and evaluate technical literature and other sources of information to address broadly-defined problems.

Incorporated Engineer (continued)

Area of learning	Incorporated Engineer (continued)		
	Foundation degrees, Higher National Diplomas and equivalents (continued)	Bachelors Top-up degrees and equivalents (continued)	Bachelors degrees and Bachelors (Honours) and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Design and innovation			
Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.			
Design	F5. Design solutions for broadly-defined problems that meet a combination of user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards.	B5. Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.	B5. Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.
Integrated/systems approach	F6. Apply a systematic approach to the solution of broadly-defined problems.	B6. Apply an integrated or systems approach to the solution of broadly-defined problems.	B6. Apply an integrated or systems approach to the solution of broadly-defined problems.

Area of learning	Incorporated Engineer (continued)		
	Foundation degrees, Higher National Diplomas and equivalents (continued)	Bachelors Top-up degrees and equivalents (continued)	Bachelors degrees and Bachelors (Honours) and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
The engineer and society			
Engineering activity can have a significant societal impact and engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.			
Sustainability	F7. Evaluate the environmental and societal impact of solutions to broadly-defined problems.	Learning outcome achieved at previous level of study.	B7. Evaluate the environmental and societal impact of solutions to broadly-defined problems.
Ethics	F8. Identify ethical concerns and make reasoned ethical choices informed by professional codes of conduct.	B8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.	B8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.
Risk	F9. Identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.	B9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.	B9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.
Security	F10. Adopt a holistic and proportionate approach to the mitigation of security risks.	Learning outcome achieved at previous level of study.	B10. Adopt a holistic and proportionate approach to the mitigation of security risks.
Equality, diversity and inclusion	F11. Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.	Learning outcome achieved at previous level of study.	B11. Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.

Area of learning	Incorporated Engineer (continued)		
	Foundation degrees, Higher National Diplomas and equivalents (continued)	Bachelors Top-up degrees and equivalents (continued)	Bachelors degrees and Bachelors (Honours) and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Engineering practice			
The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.			
Practical and workshop skills	F12. Use practical laboratory and workshop skills to investigate broadly-defined problems.	Learning outcome achieved at previous level of study.	B12. Use practical laboratory and workshop skills to investigate broadly-defined problems.
Materials, equipment, technologies and processes	F13. Select and apply appropriate materials, equipment, engineering technologies and processes.	Learning outcome achieved at previous level of study.	B13. Select and apply appropriate materials, equipment, engineering technologies and processes.
Quality management	F14. Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems.	Learning outcome achieved at previous level of study.	B14. Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems.
Engineering and project management	F15. Apply knowledge of engineering management principles, commercial context and project management.	B15. Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters.	B15. Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters.
Teamwork	F16. Function effectively as an individual, and as a member or leader of a team.	Learning outcome achieved at previous level of study.	B16. Function effectively as an individual, and as a member or leader of a team.
Communication	F17. Communicate effectively with technical and non-technical audiences.	Learning outcome achieved at previous level of study.	B17. Communicate effectively with technical and non-technical audiences.
Lifelong learning	F18. Plan and record self-learning and development as the foundation for lifelong learning/CPD.	Learning outcome achieved at previous level of study.	B18. Plan and record self-learning and development as the foundation for lifelong learning/CPD.

Area of learning	Chartered Engineer		
	Bachelors (Honours) degrees and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for IEng registration and partially meeting the academic requirement for CEng registration	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalent qualifications and apprenticeships approved or accredited as meeting the requirement for further learning for CEng registration	Integrated Masters degrees and equivalent qualifications and apprenticeships approved or accredited as fully meeting the academic requirement for CEng registration
On successful completion of an approved or accredited programme, an individual will be able to:			
Science and mathematics			
The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.			
Science, mathematics and engineering principles	C1. Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study.	M1. Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering.	M1. Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering.

Area of learning	Chartered Engineer (continued)		
	Bachelors (Honours) degrees and equivalents (continued)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalents (continued)	Integrated Masters degrees and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Engineering analysis			
Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete.			
Problem analysis	C2. Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles.	M2. Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.	M2. Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed.
Analytical tools and techniques	C3. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed.	M3. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.	M3. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.
Technical literature	C4. Select and evaluate technical literature and other sources of information to address complex problems.	M4. Select and critically evaluate technical literature and other sources of information to solve complex problems.	M4. Select and critically evaluate technical literature and other sources of information to solve complex problems.

Area of learning	Chartered Engineer (continued)		
	Bachelors (Honours) degrees and equivalents (continued)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalents (continued)	Integrated Masters degrees and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Design and innovation			
Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.			
Design	C5. Design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.	M5. Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.	M5. Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.
Integrated/systems approach	C6. Apply an integrated or systems approach to the solution of complex problems.	Learning outcome achieved at previous level of study.	M6. Apply an integrated or systems approach to the solution of complex problems.

Area of learning	Chartered Engineer (continued)		
	Bachelors (Honours) degrees and equivalents (continued)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalents (continued)	Integrated Masters degrees and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
The engineer and society			
Engineering activity can have a significant societal impact and engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.			
Sustainability	C7. Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts.	M7. Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts.	M7. Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts.
Ethics	C8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.	Learning outcome achieved at previous level of study.	M8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct.
Risk	C9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.	Learning outcome achieved at previous level of study.	M9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity.
Security	C10. Adopt a holistic and proportionate approach to the mitigation of security risks.	Learning outcome achieved at previous level of study.	M10. Adopt a holistic and proportionate approach to the mitigation of security risks.
Equality, diversity and inclusion	C11. Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.	Learning outcome achieved at previous level of study.	M11. Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion.

Area of learning	Chartered Engineer (continued)		
	Bachelors (Honours) degrees and equivalents (continued)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalents (continued)	Integrated Masters degrees and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Engineering practice			
The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.			
Practical and workshop skills	C12. Use practical laboratory and workshop skills to investigate complex problems.	Learning outcome achieved at previous level of study.	M12. Use practical laboratory and workshop skills to investigate complex problems.
Materials, equipment, technologies and processes	C13. Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.	Learning outcome achieved at previous level of study.	M13. Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations.
Quality management	C14. Discuss the role of quality management systems and continuous improvement in the context of complex problems.	Learning outcome achieved at previous level of study.	M14. Discuss the role of quality management systems and continuous improvement in the context of complex problems.
Engineering and project management	C15. Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.	Learning outcome achieved at previous level of study.	M15. Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights.
Teamwork	C16. Function effectively as an individual, and as a member or leader of a team.	M16. Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.	M16. Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.

Area of learning	Chartered Engineer (continued)		
	Bachelors (Honours) degrees and equivalents (continued)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalents (continued)	Integrated Masters degrees and equivalents (continued)
On successful completion of an approved or accredited programme, an individual will be able to:			
Engineering practice (continued)			
Communication	C17. Communicate effectively on complex engineering matters with technical and non-technical audiences.	M17. Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.	M17. Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.
Lifelong learning	C18. Plan and record self-learning and development as the foundation for lifelong learning/CPD.	Learning outcome achieved at previous level of study.	M18. Plan and record self-learning and development as the foundation for lifelong learning/CPD.

The learning outcomes can also be downloaded in an A3 table from the Engineering Council website: www.engc.org.uk/aaqa

AAQA table of competences

The Competence statements included under EngTech, IEng and CEng are taken from UK SPEC fourth edition. The intermediate competences have been developed as part of AAQA to aid progression.

A. Knowledge and understanding

	<p>EngTech – Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.</p> <p>This competence is about having knowledge of the technologies, standards and practices relevant to the applicant’s area of work and having evidence of maintaining and applying this knowledge.</p>	<p>IEng – Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.</p> <p>This competence is about having knowledge of the technologies, standards and practices relevant to the applicant’s area of practice and having evidence of maintaining and applying this knowledge.</p>	<p>CEng – Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems. This competence is about the ability to understand underpinning technical principles relevant to the applicant’s area of practice and applying them to develop technical solutions. This could involve technical solutions for novel problems with significant technical complexity. This may involve the integration of a range of technologies and consideration of other factors. This competence requires that an applicant is maintaining and developing their knowledge in their field of practice and not just that required for specific tasks.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
A1	Review and select appropriate techniques, procedures and methods to undertake tasks	Propose numerous suitable techniques, procedures and methods to undertake tasks	Maintain a sound theoretical approach to the application of technology in engineering practice	Maintain and extend a sound theoretical approach to the application of technology in engineering practice	Maintain and extend a sound theoretical approach to enable them to develop their particular role

AAQA table of competences (continued)

A. Knowledge and understanding (continued)

	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
A2	Use appropriate scientific, technical or engineering principles.	Select appropriate scientific, technical or engineering principles in specific situations.	Select appropriate scientific, technical or engineering concepts or ideas in specific situations.	Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.	Develop technological solutions to unusual or challenging problems, using their knowledge and understanding and/or dealing with complex technical issues or situations with significant levels of risk.

AAQA table of competences (continued)

B. Design, development and solving engineering problems

	<p>EngTech – Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services.</p> <p>This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant’s role.</p>	<p>IEng – Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products.</p> <p>This competence is about the ability to identify appropriate methods and approaches to use to undertake a task within their area of practice and to make a significant contribution to the development of a design or process or the maintenance of operations.</p>	<p>CEng – Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.</p> <p>This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant’s role.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
B1	Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions	Identify and evaluate causes and propose solutions to engineering problems	Identify and evaluate causes and select techniques, procedures and methods to solve engineering problems	Identify, review and select techniques, procedures and methods to undertake engineering tasks	Take an active role in the identification and definition of project requirements, problems and opportunities

AAQA table of competences (continued)

B. Design, development and solving engineering problems (continued)

	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
B2	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security, environmental impact and decommissioning	Identify, organise and use resources effectively to complete tasks, with consideration for through-life costs, quality, technology development, safety, security, maintainability, environmental impact and decommissioning	Contribute to the design and development of engineering solutions	Identify the appropriate investigations and research needed to undertake the design, development and analysis required to complete an engineering task and conduct these activities effectively
B3		Contribute to the design process.	Propose possible design solutions.	Implement design solutions for equipment or processes and contribute to their evaluation.	Implement engineering tasks and evaluate the effectiveness of engineering solutions.

AAQA table of competences (continued)

C. Responsibility, management and leadership

	<p>EngTech – Engineering Technicians shall accept and exercise personal responsibility.</p> <p>This competence is about the ability to plan and manage the applicant’s own work effectively and efficiently. It is also about the ability to consider and identify improvements to maintain quality in their work.</p>	<p>IEng – Incorporated Engineers shall provide technical and commercial management.</p> <p>This competence is about the ability to plan the applicant’s own work and manage or specify the work of others effectively, efficiently and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Incorporated Engineers are working within complex and varied working relationships they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.</p>	<p>CEng – Chartered Engineers shall demonstrate technical and commercial leadership.</p> <p>This competence is about the ability to plan the applicant’s own work and manage or specify the work of others effectively and efficiently in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Chartered Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
C1	Work reliably and effectively without close supervision, to the appropriate codes of practice	Work reliably and effectively without supervision, to the appropriate codes of practice	Assist in the planning for effective project implementation	Plan the work and resources needed to enable effective implementation of engineering tasks and projects	Plan the work and resources needed to enable effective implementation of a significant engineering task or project

AAQA table of competences (continued)

C. Responsibility, management and leadership (continued)

	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
C2	Accept responsibility for the work of themselves or others	Manage tasks and people	Manage tasks, people and resources	Manage (organise, direct and control) programme or schedule, budget and resource elements of engineering tasks or projects	Manage (organise, direct and control) programme or schedule, budget and resource elements of a significant engineering task or project
C3	Accept, allocate and supervise technical and other tasks.	Manage teams to meet technical and managerial needs	Manage teams to meet changing technical and managerial needs	Manage teams or the input of others into own work and assist others to meet changing technical and management needs	Lead teams or technical specialisms and assist others to meet changing technical and managerial needs
C4		Identify where continuous quality improvement has been used.	Contribute proactively to continuous quality improvement.	Take an active role in continuous quality improvement.	Bring about continuous quality improvement and promote best practice.

AAQA table of competences (continued)

D. Communication and interpersonal skills

	<p>EngTech – Engineering Technicians shall use effective communication and interpersonal skills.</p> <p>This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.</p>	<p>IEng – Incorporated Engineers shall demonstrate effective communication and interpersonal skills.</p> <p>This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.</p>	<p>CEng – Chartered Engineers shall demonstrate effective communication and interpersonal skills.</p> <p>This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
D1	Communicate effectively with others, at all levels, in English	Communicate effectively with others, at all levels, in English	Communicate effectively with others, at all levels, in English	Communicate effectively with others, at all levels, in English	Communicate effectively with others, at all levels, in English
D2	Work effectively with colleagues, clients, suppliers or the public	Work effectively with colleagues, clients, suppliers or the public	Present and discuss proposals	Clearly present and discuss proposals, justifications and conclusions	Clearly present and discuss proposals, justifications and conclusions
D3	Demonstrate personal and social skills and awareness of diversity and inclusion issues.	Demonstrate personal and social skills and awareness of diversity and inclusion issues.	Demonstrate personal and social skills and awareness of diversity and inclusion issues.	Demonstrate personal and social skills and awareness of diversity and inclusion issues.	Demonstrate personal and social skills and awareness of diversity and inclusion issues.

AAQA table of competences (continued)

E. Personal and professional commitment

	<p>EngTech – Engineering Technicians shall demonstrate commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.</p> <p>This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Engineering Technician should set a standard and example to others with regard to professionalism.</p>	<p>IEng – Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</p> <p>This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Incorporated Engineer should set a standard and example to others with regard to professionalism.</p>	<p>CEng – Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</p> <p>This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. A Chartered Engineer should set a standard and example to others with regard to professionalism.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
E1	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct
E2	Understand the safety implications of their role and can apply safe systems of work	Understand the safety implications of their role and can apply and improve safe systems of work	Understand the safety implications of their role and can manage, apply and improve safe systems of work	Understand the safety implications of their role and can manage, apply and improve safe systems of work	Understand the safety implications of their role and manage, apply and improve safe systems of work
E3	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work

AAQA table of competences (continued)

E. Personal and professional commitment (continued)

	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
E4	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice
E5	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.

Glossary

Accreditation A process of peer review of a **programme** in a specified location, against published **learning outcomes** and/or **competence**, including a review of **delivery**, assessment and facilities. This usually applies to programmes that are not assured externally. This usually involves a visit from a team of professional engineers nominated by **Licensees**. See also: **Approval**.

AHEP **Accreditation of Higher Education Programmes**. One of the Standards which the **Engineering Council** publishes, along with **AAQA**, the **ICTTech Standard**, **RCoP** and **UK-SPEC**. Working in line with UK-SPEC, AHEP sets out the standards for the **accreditation** of higher education **programmes** in engineering. It also outlines the application process for universities that wish to secure or maintain accreditation of their programmes. Accreditation is carried out by **Licensees** in accordance with these requirements. See: www.engc.org.uk/ahep

Apprenticeship A work-based learning **programme** with elements of **learning outcomes** from the workplace, approved as an apprenticeship by the statutory regulator for apprenticeships (**IfATE** in England), or equivalent work-based programmes in jurisdictions that do not have equivalent regulation.

Apprenticeship Standard An apprenticeship standard is a definition of requirements for an apprenticeship **programme** in England at a specified level. It is used by training **providers**, colleges and employers to ensure that all **apprenticeship** programmes are delivered consistently and to agreed standards. Each standard includes details of the knowledge, skills and behaviours to be demonstrated by the end of the apprenticeship and may include formal qualifications, information on job roles, entry routes, length of apprenticeships and career paths available on completion. Each standard is developed and owned by an employer-led consortium and approved by **IfATE**.

Approval A process of peer review of a qualification or **apprenticeship** against published **learning outcomes** and/or **competence**, for which an external body (which may be a **Licensee**) quality assures **delivery**, assessment and facilities. Approval does not require a visit.

Awarding Organisation Awarding Organisations develop and award qualifications to meet the needs of learners, employers and other stakeholders. In the UK, they are ‘recognised’ and regulated by Ofqual, the Scottish Qualifications Authority (SQA), and Qualifications Wales. Awarding Organisations focus on:

- Developing high quality qualifications that meet the needs of employers and learners
- Approving centres and working with them to ensure high quality **delivery** of qualifications
- Carrying out activity designed to assure the quality of the qualifications awarded
- Developing products and services to support their centres and learners

Chartered Engineer (CEng) One of the **professional registration** titles available to individuals who meet the required standards of **competence** and **commitment**. See: www.engc.org.uk/ceng

Commitment A set of values, rules of conduct, and obligations that maintain and enhance the reputation of the engineering profession and the individual. Demonstrating both **competence** and commitment is part of the requirement to become **professionally registered** with the **Engineering Council**.

Competence The ability to carry out a task to an effective standard. Achieving competence requires the right level of knowledge, understanding and skill, as well as a professional attitude. It is part of the requirement (along with **commitment**) that must be demonstrated in order for an individual to be admitted to the Engineering Council’s register at the relevant level. AAQA and associated documentation focus upon professional competence as set out in **UK-SPEC**, not specific occupational competence. Competences are also specified in the **ICTTech Standard** and **programmes** may be approved or accredited against the competence within that Standard.

Degree apprenticeship A **higher apprenticeship** that contains a degree.

Delivery The delivery of a **programme**, encompassing resources and facilities, methods of learning, development and assessment, support and supervision. Not to be confused with the design of a programme, which encompasses the planning, content or syllabus.

Dublin Accord	An international agreement among the bodies responsible for recognising programmes and qualifications for Engineering Technicians . It establishes a benchmark for Engineering Technician education across those bodies, and recognises the equivalence of approved or accredited Engineering Technician programmes. See International recognition on pages 26–27, or: www.ieagrements.org/dublin
ECTS credits	European Credit Transfer and Accumulation System . A tool of the European Higher Education Area (EHEA) for making studies and courses more transparent. Based on the courses' defined learning outcomes and associated workloads.
ENAAE	The European Network for Engineering Accreditation . ENAAE is the European network which authorises accreditation and quality assurance agencies to award the EUR-ACE® label to accredited engineering degree programmes . See: www.enaee.eu
Engineering Council	The UK regulatory body for the engineering profession. The Engineering Council sets and maintains internationally recognised standards of professional competence and ethics (the Standards) and holds the UK register of professional engineers and technicians.

Engineering Technician (EngTech)	One of the professional registration titles available to individuals who meet the required standard of competence and commitment . See: www.engc.org.uk/engtech
EUR-ACE®	EUR-ACE® (EUROpean-ACcredited Engineer) is a quality assurance label that can be awarded to accredited engineering degree programmes . The Engineering Council is authorised by ENAAE to award the EUR-ACE® label.
External Quality Assurance (EQA)	Quality assurance conducted by a body which is independent of the provider . This will often be conducted by an awarding organisation but there may be circumstances when it is completed by a Licensee . To consider an apprenticeship or qualification for approval a Licensee must satisfy itself that there are suitable independent quality assurance arrangements in place to be confident about the quality of resources, delivery and assessment across all providers. Note: this definition does not mean External Quality Assurance in the sense of IfATE EQA.
Generic	The competences set out in UK-SPEC are generic, meaning they apply to all types of engineering and not a particular field of specialism.

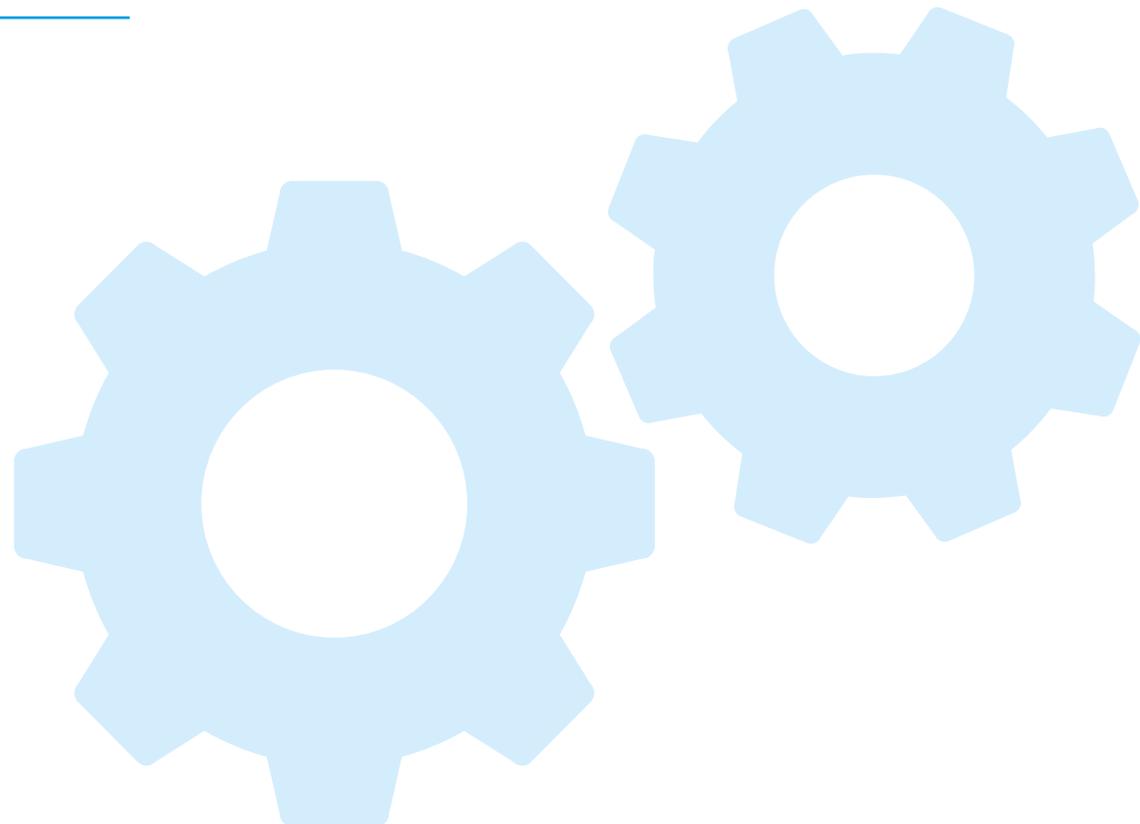
GLH	Guided Learning Hours. Hours expected to be spent learning through both contact time and independent study. Total GLH is often measured as 10 times the credit value of the module or programme .	IfATE	The Institute for Apprenticeships and Technical Education. An employer-led Crown Non-Departmental Public Body in England, which oversees the development, approval and publication of apprenticeship standards and assessment plans as well as the occupational maps for apprenticeships. The Institute has a role overseeing External Quality Assurance (EQA) across all EQA providers to ensure quality, consistency and credibility. See: www.instituteforapprenticeships.org
Graduate Apprenticeship	An apprenticeship that contains a degree, in Scotland.	Incorporated Engineer (IEng)	One of the professional registration titles available to individuals who meet the required Standards of competence and commitment . See: www.engc.org.uk/ieng
Higher Apprenticeship	An apprenticeship at Level 4 or above (In England, Wales or Northern Ireland).	Interim Registration	Confirmation of the acquisition of the underpinning knowledge and understanding required for one's chosen professional registration title.
ICTTech	Information and Communications Technology Technician. One of the professional registration titles available to individuals who meet the required standards of competence and commitment . See: www.engc.org.uk/icttech	Intermediate Competences	Competence statements at Levels 4 and 5 that sit between EngTech/ICTTech and IEng competence statements
ICTTech Standard	Information and Communications Technology Technician Standard. This document sets out the competence and commitment requirements for professional registration as an Information and Communications Technology Technician (ICTTech). The ICTTech Standard is one of the Standards which the Engineering Council publishes, along with AAQA , AHEP , RCoP , and UK-SPEC . See: www.engc.org.uk/icttechstandard	International Accords	Mutual recognition of qualifications, both in and outside of Europe. Includes EUR-ACE® , Washington , Sydney and Dublin Accords .

IPD	Initial Professional Development. The process of an individual developing their knowledge, understanding, skills and experience for professional registration . IPD can take place independently, or through structured programmes .
ISCED	The UNESCO International Standard for Classification of Education is designed to serve as a framework to classify educational activities as defined in programmes and the resulting qualifications into internationally agreed categories.
Learner	A student or trainee.
Learning outcome	A statement of achievement expected of an individual who has completed an approved or accredited qualification or apprenticeship . In order to achieve approved or accredited status a programme must be at the correct level and address a set of associated learning outcomes .
Licensee	Membership organisation which is licensed by the Engineering Council to assess candidates for professional registration . Some institutions also have a licence to approve or accredit qualifications and apprenticeships . Previously known, informally, as Professional Engineering Institutions or PEIs. See: www.engc.org.uk/licensees

Professional registration	The process in which an individual is admitted to the Engineering Council's Register as an Engineering Technician (EngTech) , Incorporated Engineer (IEng) , Chartered Engineer (CEng) or an Information and Communications Technology Technician (ICTTech). To achieve professional registration the individual must demonstrate, via a peer review process by a Licensee , that they have met the profession's standards of commitment and competence . Individuals who have been awarded a professional registration title may use the relevant post-nominal.
Programme	A qualification or apprenticeship .
Provider	Any body or organisation engaged in the delivery of knowledge and understanding or associated training within the apprenticeship or IPD .
RCoP	Registration Code of Practice. One of the Standards which the Engineering Council publishes, along with AAQA , AHEP , ICTTech Standard and UK-SPEC . RCoP sets out the rules, for Licensees , on the process of awarding professional registration titles such as ICTTech , EngTech , IEng or CEng .

Recognition	Programmes may be recognised by Licensees as delivering some, or all, of the knowledge and understanding required for professional registration and/or competence either in line with the full requirements for a professional title or at the threshold level set out in AAQA. Recognition is through approval or accreditation .	Threshold	The minimum standard that a programme must meet to be recognised . Work-based programmes delivering professional competence may be recognised either against the full set of UK-SPEC or ICTTech competences for a title, or a set of intermediate competences between EngTech and IEng as set out in this Standard.
Registration Standards Committee	The Engineering Council committee responsible for standards related to registration of professional engineers, including those set out in this Standard.	TQT	Total Qualification Time . This is an indication of how long a learner might take to study a qualification, including the time spent on their individual study and on assessment. It includes Guided Learning Hours (GLH) .
Royal Charter	A formal document issued by the monarch granting rights and powers to an individual or an organisation.	UK-NARIC	National Academic Recognition Information Centre . UK-NARIC is the national agency which compares and recognises international qualifications and skills.
SCQF	Scottish Credit and Qualifications Framework . This covers qualifications and other academic awards in Scotland. See: www.scqf.org.uk	UK-SPEC	UK Standard for Professional Engineering Competence and Commitment . This document sets out the competence and commitment requirements for professional registration as an EngTech , IEng or CEng . UK-SPEC is one of the Standards which the Engineering Council publishes, along with AAQA , AHEP , ICTTech Standard and RCoP . See: www.engc.org.uk/ukspec
Sydney Accord	An international agreement among the bodies responsible for accrediting engineering technologist degree (IEng) programmes. It establishes a benchmark for engineering technologist education across those bodies, and recognises the equivalence of accredited engineering technologist programmes . See International recognition on pages 26–27 or: www.ieagreements.com/sydney		

Unique Identifier	Regulated qualifications in the UK possess a unique identifier (typically an alphanumeric code) by which they are identified on the regulator's register.
Washington Accord	An international agreement among the bodies responsible for accrediting engineering degree (CEng) programmes. It establishes a benchmark for professional engineering education across those bodies, and recognises the equivalence of accredited engineering programmes . See International recognition on pages 26–27 or: www.ieagreements.org/washington





T +44 (0)20 3206 0500

F +44 (0)20 3206 0501

info@engc.org.uk

www.engc.org.uk

Registered Charity: 286142

© Engineering Council 2020.

Please refer to the Engineering Council website, www.engc.org.uk for the most up-to-date version.

The Engineering Council encourages publication of extracts from this Standard, subject to attribution to Engineering Council.