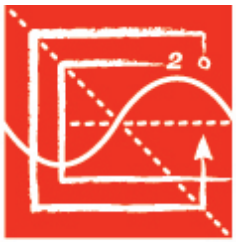

Understanding the Mutual Recognition Agreement

Between NCEES and the U.K. Engineering Council

April 2024

Executive Summary

In response to increasing interest from government bodies, employers, and professional associations, there has been a concerted effort to explore the feasibility of mutual recognition of professional qualifications between the United Kingdom and the United States. This intention was articulated by the U.K. Prime Minister's opening remarks in the Atlantic Declaration at the White House on June 8, 2023: "*An agreement to work towards mutual recognition of more professional qualifications in areas like engineering...*"

Beginning in June 2023, the National Council of Examiners for Engineering and Surveying (NCEES) began working with the Engineering Council (EngC) to develop a mutual recognition agreement (MRA) to facilitate this objective. EngC, established by Royal Charter, governs the engineering profession in the United Kingdom, setting and upholding internationally recognized standards of professional competence and dedication for the public benefit.

The core objective of this agreement is to optimize mobility for Chartered Engineers (CEngs) in the United Kingdom and Professional Engineers (P.E.s) in the United States. By simplifying administrative procedures, eliminating redundant assessments, and seeking cost-efficient approaches, the aim is to facilitate seamless movement for professionals between our jurisdictions. Such an agreement is beneficial to safeguarding the public health, safety, and welfare for both nations by having individuals licensed in the proper jurisdictions. This mutual recognition also fosters increased opportunities for individuals and businesses, promoting trade, knowledge exchange, and collaboration while addressing skills shortages in critical sectors.

The MRA builds on the foundation laid by both organizations as founding members of the International Engineering Alliance (IEA) and the International Professional Engineers Agreement (IPEA). The IPEA has an agreed-upon set of professional competencies that individuals must meet to be on a member country's section of the International Professional Engineers Register. The means for assessing the competencies may vary from country to country, but in the end, all individuals on a register possess the established professional competencies. For example, the United States uses the Principles and Practice of Engineering (PE) exam to assess, while the United Kingdom uses a structured process involving experience reviews and an oral examination.

In summary, P.E.s on the NCEES international register will qualify for licensure as a CEng in the United Kingdom. CEngs on the EngC international register will qualify for licensure as a P.E. in a U.S. jurisdiction that participates in the MRA. Someone on the U.K. register is substantially equivalent to someone on the U.S. register and vice versa. This reciprocal recognition streamlines the licensure process, bypassing redundant traditional requirements on both sides, though local jurisdictional or discipline-specific criteria may still apply.

Given the decentralized nature of engineering licensure in the United States, each NCEES engineering member board must independently decide on participation in the MRA. NCEES stands ready to assist with information and guidance, facilitating any necessary legislative or regulatory adjustments. Moreover, British Consulates are available to provide support to interested boards throughout the process. Like the old saying "if there is a will, there is a way," if a member board has the will, we can show the way.

Timeline of the MRA

April 2023

- CEO David Cox attends formal signing of an MRA between the National Council of Architectural Registration Boards (NCARB) and the United Kingdom at the invitation of the British Embassy. He is informed by the British Ambassador to the United States that the U.K. Prime Minister will be discussing the desire for a similar agreement with engineers in June during his visit to the United States.

- CEO Cox informs the NCEES board of directors (BOD) and is directed to proceed with preliminary discussions.

June 2023

- The U.K. Prime Minister makes remarks in the Atlantic Declaration at the White House, expressing his desire for an engineering agreement.

- CEO Cox begins initial conversations with EngC in Taiwan at an IEA meeting. An initial framework for an MRA is developed.

August 2023

- NCEES BOD is updated on June work.

- British Consulate representatives address the Council and the Member Board Administrator Forum at the NCEES annual meeting in Boston.

October 2023

- Initial draft is completed and presented to boards of directors for NCEES and EngC. The boards provide feedback.

November 2023

- Second draft is completed and distributed to NCEES BOD, and feedback is received.

December 2023

- Third draft is completed and distributed to NCEES BOD in preparation for London visit.

February 2024

- The British invite a delegation of 11 member boards to London to discuss the draft MRA, meet with government officials, review the U.K. processes with EngC, etc., and provide feedback.

- Final draft is completed and approved by NCEES BOD.

March 28, 2024

- Final draft is approved by EngC BOD.

MRA

The draft MRA is attached as Appendix A. The following are highlights:

- P.E.s on the NCEES international register will qualify for licensure in the United Kingdom as a CEng. CEngs on the EngC international register will qualify for licensure as a P.E. in a U.S. jurisdiction that participates in the MRA. Someone on the U.K. register is substantially equivalent to someone on the U.S. register and vice versa.
- An applicant qualifying under the MRA will not have to meet overarching traditional requirements, such as a CEng being required to take the Fundamentals of Engineering (FE) and PE exams, or a P.E. undergoing the stringent experience review/mapping to competencies and the oral exam. However, applicants still may need to meet local jurisdictional or discipline-specific requirements.
- The parties will cooperate with each other regarding disciplinary and enforcement issues related to individuals licensed or applying under the MRA.
- The MRA does not preclude the need to conform to applicable immigration and visa requirements.
- The parties will provide an annual report to each other on the applicants who have applied under the terms of the MRA.
- The parties will review and update the MRA at least every five years based on their experiences.

IEA/IPEA Basics

EngC and NCEES both became founding members of the IEA and the IPEA in 1997. Participation by NCEES was approved by the Council prior to that signing. The IEA has engineering-related accords and agreements. The accords cover education, and the agreements deal with licensure. In the United States, ABET is the member of accords, and NCEES is the member of agreements. In many countries, including the United Kingdom, one entity covers both.

The IEA is a global organization comprised of members from 41 jurisdictions within 29 countries, across seven international agreements. These international agreements govern the recognition of engineering educational qualifications and professional competence. Through the educational accords and competence agreements, members of the IEA establish internationally bench-marked standards for engineering education and expected competence for engineering practice.

A professionally competent person has the attributes necessary to perform the activities within the profession to the standards expected in independent employment or practice. The professional competence profile records the elements of competence necessary for performance that the professional is expected to be able to demonstrate at the stage of attaining licensure. Professional competence can be described using an agreed-upon set of attributes.

Each member maintains an international register of individuals who meet these agreed-upon professional competencies and other requirements of the IPEA, including a minimum of seven years of experience, proof of continuing education, and no disciplinary actions. Each member is audited every six years to ensure compliance with the agreement.

To be placed on the NCEES international register, an individual must have an NCEES Record and be a Model Law Engineer, which requires an engineering degree from a program accredited by the Engineering Accreditation Commission of ABET (EAC/ABET), passage of the FE and PE exams, at least four years of experience, and no disciplinary actions. That individual then goes through further evaluation to ensure seven years of experience and a record of continuing education. The only exception is that those without an EAC/ABET-accredited engineering degree can still be on the international register if they have a degree from a Washington Accord program. Our PE exam is the assessment tool used to determine that an individual has met the agreed-upon competencies. NCEES has mapped each PE exam specification and related materials against the IPEA competencies to make sure there are no gaps.

EngC also has a detailed process for placing a CEng on their register. Again, those individuals must have at least seven years of experience, proof of continuing education, and no disciplinary actions. The educational requirement is basically our equivalent of an engineering master's degree. They assess meeting of the competencies through evaluating everyone's experience record to map actual work to each of the competencies and then conducting an oral exam (like a thesis defense). During that interview, the applicant orally connects different parts of the experience record to each competency. On average, an applicant obtains approximately 10 years of experience to meet all the competencies.

Individuals on both registers have been assessed and determined to possess the competencies required under the IPEA. Therefore, individuals on both registers are determined to be substantially equivalent, and the processes in making that determination are substantially equivalent and are subject to audit under the IPEA terms. Both NCEES and EngC are just completing their six-year audit and have received preliminary notice of passage.

Next Steps

NCEES and EngC still must work out logistics, such as U.K. applicants obtaining an NCEES Record so that we can transmit all their information to any member board to which they apply, and the equivalent for U.S. applicants going to the United Kingdom. We will also need to establish fees that we both intend to be reasonable and approximately the same in the United States and United Kingdom. Any individual state or jurisdictional fees will still apply, as with any candidate.

Since engineering licensure decisions are made at the state level in the United States, each individual NCEES engineering member board must decide whether to participate in the MRA. NCEES encourages member boards to participate and can assist with additional information and help in the determination of any law or rules changes that may be necessary. Many boards have flexible language that would allow them to participate without any changes. If you have the will, NCEES and the British Consulates will assist in helping you with the way.

We are planning a ceremonial signing for interested member boards at the British Consulate in Chicago during the NCEES annual meeting in August. All a member board needs to do to take part is express an interest in pursuing participation in the MRA. It is not required that the member board be ready to participate at that time. Some boards may need law or rule changes and other meetings and process changes that will take time to complete. There is no time requirement imposed on member boards' participation.

Appendices

A. Mutual Recognition Agreement
B. IEA Graduate Attributes and Professional Competencies
C. Delegation of U.S. Engineering State Board Members
D. EngC Introduction
E. U.K. Standard for Professional Engineering Competence and Commitment
F. EngC Disciplinary Procedure Guidance

APPENDIX A

MUTUAL RECOGNITION AGREEMENT

BETWEEN THE NATIONAL COUNCIL OF EXAMINERS FOR ENGINEERING AND SURVEYING (USA) AND THE ENGINEERING COUNCIL (UK)

MUTUAL RECOGNITION AGREEMENT

Between

The National Council of Examiners for Engineering and Surveying (NCEES, USA) and

the Engineering Council (UK)

together "the parties".

To facilitate mobility of engineering professionals through streamlined Professional Registration/Membership processes.

1. PARTIES

NCEES is a not-for-profit organization with a mission to advance licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public. NCEES members are the engineering and surveying licensure boards from all 50 U.S. states, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands.

The Engineering Council was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK.

2. DEFINITIONS

Within this document, the following definitions apply:

2.1 "Mutual recognition" means the process of establishing the competence of an individual for independent practice in an engineering occupational role as a requirement of Professional Registration/Licensure.

2.2 "Home Jurisdiction" means the jurisdiction in which an engineer making application under this agreement already holds Professional Registration/Licensure.

2.3 "Host Jurisdiction" means the jurisdiction to which an engineer applies for Professional Registration/Licensure under the terms of this Agreement.

2.4 "Professional Registration/Licensure" means recognition by a Signatory or Participating Authority awarded on the basis of a demonstration of competence for independent practice through a professional review based on the competency framework UK-SPEC or a US Member Board PE License, in combination with the International Professional Engineer title (IntPE).

2.5 "Participating Authority" means a UK Professional Engineering Institution (PEI) licensed by the Engineering Council to award CEng that has ratified this agreement. A list of current Participating Authorities will be maintained by the Engineering Council and provided to NCEES This list is shown in Appendix 3.

2.6 "Participating Member Board" means a US Licensing Authority that has opted into this agreement. Participating states agree to accept an NCEES record from a UK Chartered Engineer that has been gained via this agreement. A current list of Participating Member Boards will be maintained by NCEES and be provided to The Engineering Council. This list is shown in Appendix 4.

2.7 Nothing in this agreement supersedes national or state legislation as applicable in the jurisdiction of the Participating Authority or Participating Member Board.

3. PURPOSE AND SCOPE

3.1 This Agreement provides for a streamlined process by which engineers with Professional Registration/Licensure in their home jurisdiction in this agreement can gain recognition in the host jurisdiction. The agreement is intended to provide

- a streamlined route to the UK Chartered Engineer title for US Professional Engineers with a state license and
- a streamlined route to a US Member Board Professional Engineer license for UK Chartered Engineers.

3.2 This Agreement is intended to streamline the admission pathway in the host jurisdiction for engineers holding a Professional Registration/Registered Professional Title/License in the home jurisdiction. This Agreement aims to:

- minimise duplication of assessment processes
- recognise jurisdictional differences and organizational autonomy
- maintain confidence in the quality of Professional Registration/Licensure decisions in both jurisdictions
- avoid restrictions on the cross-border provision of a service.

3.3 This Agreement covers engineers who have been admitted to any of the following Professional Registrations:

3.3.1 Professional Engineer

- Chartered Engineer (CEng), who also holds the title International Professional Engineer (IntPE), awarded by the Engineering Council, UK
- Professional Engineer (PE), licensed in a participating US Member Board, who also holds the title International Professional Engineer (IntPE), awarded by NCEES. This is also known as an NCEES International Registered Professional Engineer (IRPE)
- The requirements for attaining IntPE/IRPE in each jurisdiction are set in Appendix 1

3.4 Nothing in this Agreement shall apply to individual practice or malpractice disputes.

3.5 Engineers who have gained Professional Registration/Licensure in the home jurisdiction through another mutual recognition pathway, containing exemptions from the usual assessment process, are not eligible for the pathways set out in this agreement.

4. MUTUAL RECOGNITION PROVISIONS

4.1 The parties agree to apply processes and criteria consistent with the mutual recognition pathways set out in Appendix 2 when considering applications for Professional Registration/Licensure from engineers who hold /Professional Registration/Licensure in the home jurisdiction.

4.2 The Parties respect jurisdictional autonomy and recognise that there may be additional criteria imposed relevant to:

4.2.1 local jurisdictional practices, or the legislative or regulatory framework.

4.2.2 discipline-specific requirements of a Participating Authority or Participating Member Board.

5. DISCIPLINE AND ENFORCEMENT

5.1 Both Parties and all Participating Authorities and Participating Member Boards will cooperate to the extent possible on disciplinary and enforcement issues.

5.2 An application for Professional Registration/Licensure made under this Agreement must include a question requiring the applicant to disclose any sanctions related to the practice of engineering in other jurisdictions. Information regarding sanctions may be considered in the assessment process.

5.3 An application for Professional Registration/Licensure can only be made under this Agreement if the applicant provides written permission for parties to distribute and exchange assessment information and any information regarding sanctions between all involved jurisdictions.

5.4 Failure to fully disclose or provide any of the required information may be the basis for denial of the application, or for sanctions, including revocation of the Professional Registration/Licensure.

5.5 Each jurisdiction will take appropriate action in accordance with their rules and regulations if an engineer violates the standards of that jurisdiction. Each jurisdiction shall promptly report sanctions to the other jurisdiction in which it knows the engineer is recognised via an appropriate alert mechanism.

5.6 A jurisdiction will take appropriate action, subject to its own rules and regulations and the principle of natural justice, related to a sanction that is reported to them by another jurisdiction.

6. IMMIGRATION AND VISA ISSUES

6.1 Professional Registration/Certification granted under this Agreement in a Host Jurisdiction does not preclude the need to conform to applicable immigration and visa requirements of the Host Jurisdiction.

7. INFORMATION EXCHANGE

7.1 The Parties will notify each other and provide copies of any major changes in policy, criteria, procedures and programmes that might affect this Agreement.

7.2 The Parties will provide an annual report to each other on all applicants who have applied pursuant to the terms of this Agreement.

7.3 The Parties will from time-to-time undertake mutual observation of processes and procedures. This shall be done routinely as part of the renewal of the agreement.

8. DISPUTE RESOLUTION

8.1 The Parties to this Agreement will at all times endeavour to agree on the interpretation and application of this Agreement and will make every attempt through co-operation and consultation to arrive at a mutually satisfactory resolution of any matter that might affect its operation. If a dispute arises that cannot be resolved through informal discussions within sixty (60) days of when the dispute arises, the Parties will attempt to resolve the dispute through non-binding mediation and/or another form of alternative dispute resolution as may be agreed upon by the Parties, prior to any Party resorting to litigation.

8.2 The Parties may request in writing consultation with the other Party regarding any actual or proposed measure or any other matter that it considers might affect the operation or interpretation of this Agreement.

9. TERM OF AGREEMENT

9.1 This Agreement will come into effect when signed by the Parties.

9.2 This Agreement supersedes all other such mutual recognition agreements between NCEES, the Engineering Council and the Participating Authorities.

9.3 The Parties will review and update the Agreement and recommend changes where appropriate at least every five (5) years. This Agreement may be amended, however, only with the written consent of both Parties.

10. TERMINATION

10.1 A Party or any Participating Authority may withdraw from this Agreement six (6) months after it provides written notice of withdrawal to the other Party. If a Participating Authority withdraws, the Agreement will remain in force for the remaining Participating Authorities.

10.2 If at any time all Participating Authorities have withdrawn from the Agreement, the Agreement will automatically terminate.

10.3 Any registrant approved or in the process of being assessed at the time of the Agreement being terminated will be treated as if this Agreement is still in existence.

NCEES **Engineering Council**

Date Executed:

APPENDIX 1

The requirements for attaining IntPE/IRPE in each jurisdiction.

Requirement	NCEES International Registered Professional Engineer (IntPE)	Engineering Council CEng IntPE
Registration /Licensure	Be a citizen or permanent resident currently licensed as a professional engineer in a U.S. state or territory	Be currently registered as a Chartered Engineer and member of a UK PEI
Discipline	Hold a record clean of disciplinary action	Be currently in good standing with your PEI and have no disciplinary action outstanding
Underpinning Knowledge and Understanding	Have a degree from an EAC ABET-accredited engineering program, or an accredited degree recognised under the Washington Accord.	An accredited degree recognised under the Washington Accord, or equivalent academic qualification
Experience	Have at least seven years of qualifying experience, including two years in responsible charge of significant engineering work	Have at least seven years of qualifying experience, including two years in responsible charge of significant engineering work
Assessment	Have passing scores on the NCEES FE and PE examinations	1) Have demonstrated underpinning engineering knowledge and understanding to UK/European Masters level in their discipline 2) Have demonstrated that they meet the UK standard of competence and commitment set out in UK-SPEC through: a) Professional Review part 1: assessment of discipline-specific documentary evidence b) Professional Review part 2: in-depth interview by two trained assessors, including applicant presentation 3) Approval from registration committee
Competence	NCEES Model Rules and IPEA professional competences	UK-SPEC Chartered Engineer Competences and IPEA professional competences
Continuing Professional Development	Have met the applicable continuing professional competency (CPC) requirements of the jurisdiction(s) where you are licensed. If the jurisdiction does not have a CPC requirement, the applicant must comply with the NCEES CPC Standard	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice
Discipline-specific and jurisdictional requirements (e.g., local laws, ethics exam)	Handled at Member Board level	Handled by PEI

APPENDIX 2

MUTUAL RECOGNITION PATHWAYS

The Professional Registration/Licensure processes of the Parties are as follows:

a) NCEES requirements to obtain an NCEES Record as the Host Jurisdiction

An NCEES Record is a verified compilation of information an applicant is required to submit to a state licensing board as part of the licensure application process. Each completed Record is a verified compilation of an applicant's official academic transcripts, full employment history, professional references, and exam results.

The NCEES Record is designed to meet the licensure requirements of most states. Since licensure requirements vary from state to state, there may be times when a Record holder must submit additional information to a state licensing board to satisfy its licensure requirements. This may include information about their education, references, existing licenses, or experience information.

Standard application requirements	Required under the Agreement Y/N	Notes
Submission of an application form	Yes	Create online NCEES record
References	Yes, but can be UK registrants.	Five references who can reflect the character and diversity of your experience and are personally acquainted with your professional reputation. For engineering applicants, references must be engineers who are licensed in the United States.
Education information	Yes	Details for each college, university, and technical school attended, including transcripts. NCEES accepts the UK PEI assessment of the academic base as meeting NCEES/IntPE requirements.
Professional Experience	Yes	Chronological listing of work experience beginning with graduation from a university
Competence assessment	No	Already meets IntPE requirements
FE and PE exam verification	No	Exempt under the agreement
CPD review	In line with Member Board requirements	IntPE CPD requirements already met
Local knowledge and/or discipline specific practice assessment (e.g., local laws and ethics exam)	In line with Member Board requirements	
Approval by NCEES Member Board	Yes	

b) Engineering Council requirements for registration as a Chartered Engineer (CEng) as the Host Jurisdiction

The Engineering Council was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK. The standards of professional competence and commitment are set out in the UK Standard for Professional Engineering Competence (UK-SPEC). This standard requires registrants to make a commitment to recording their CPD activities. Participating Authorities undertake random samples of professionally active registrants' CPD records on an annual basis.

Standard application requirements	Required under the Agreement (Y/N)	Notes
Submission of an application form	Yes	In English
Academic assessment	No	Applicants are required to provide copies of academic qualifications
Holistic competence assessment	No	
Local knowledge and/or discipline specific practice assessment	Yes	Any assessment is normally to be restricted to situations where UK-specific knowledge or discipline-specific requirements are applied as standard to home candidates
Professional Review Interview	No	Any assessment of Local Knowledge or current competence may involve an interactive interview
CPD review	In line with UK Participating Authority requirements	Registrants are required to ensure their CPD records are up to date. UK Participating authorities undertake annual random samples of professionally active registrants' CPD records and provide feedback.
Registration (Professional Registration/Membership) Committee Approval	Yes	

Assessment Process

On receipt of an application through this agreement, the Host Jurisdiction/Participating Authority will contact the Home Jurisdiction/Participating Authority to request confirmation of Professional Registration/Certification status, and registration/licensure date and date of being admitted to the international register (IntPE).

Interactive assessments or professional review interviews will only be used if their purpose is to assess local knowledge and/or discipline specific practice.

Written assignments or formal examinations may also be valid mechanisms for assessing local knowledge or discipline specific practice if they are used for the same purpose for assessing local engineers in the host jurisdiction.

Appendix 3

List of UK Participating Authorities (subject to ratification)

1. BCS, The Chartered Institute for IT
2. British Institute of Non-Destructive Testing (BINDT)
3. Chartered Association of Building Engineers (CABE)
4. Chartered Institution of Building Services Engineers (CIBSE)
5. Chartered Institution of Civil Engineering Surveyors (CICES)
6. Chartered Institution of Highways & Transportation (CIHT)
7. Chartered Institute of Plumbing and Heating Engineering (CIPHE)
8. Chartered Institution of Water and Environmental Management (CIWEM)
9. Energy Institute (EI)
10. Institution of Agricultural Engineers (IAgrE)
11. Institution of Civil Engineers (ICE)
12. Institution of Chemical Engineers (IChemE)
13. Institution of Engineering Designers (IED)
14. Institution of Engineering and Technology (IET)
15. Institute of Explosives Engineers (IExpE)
16. Institution of Fire Engineers (IFE)
17. Institution of Gas Engineers and Managers (IGEM)
18. Institute of Highway Engineers (IHE)
19. Institute of Healthcare Engineering and Estate Management (IHEEM)
20. Institution of Lighting Professionals (ILP)
21. Institute of Marine Engineering, Science & Technology (IMarEST)
22. Institution of Mechanical Engineers (IMechE)
23. Institute of Measurement and Control (InstMC)
24. Institution of Royal Engineers (InstRE)
25. Institute of Acoustics (IOA)
26. Institute of Materials, Minerals and Mining (IOM3)
27. Institute of Physics (IOP)
28. Institute of Physics and Engineering in Medicine (IPEM)
29. Institution of Railway Signal Engineers (IRSE)
30. Institution of Structural Engineers (IStructE)
31. Institute of Water
32. INCOSE UK, the UK Chapter of the International Council on Systems Engineering (INCOSE)
33. Permanent Way Institution (PWI)
34. Nuclear Institute (NI)
35. Royal Aeronautical Society (RAeS)
36. Royal Institution of Naval Architects (RINA)
37. Safety and Reliability Society (SaRS)
38. The Society of Operations Engineers (SOE)
39. The Welding Institute

Links are found here: https://www.engc.org.uk/peis

Appendix 4

List of Participating US Member Boards

APPENDIX B

INTERNATIONAL ENGINEERING ALLIANCE

GRADUATE ATTRIBUTES & PROFESSIONAL COMPETENCIES

PROUDLY SUPPORTED BY:

World Federation of Engineering Organizations
Fédération Mondiale des Organisations d'Ingénieurs

unesco

PREAMBLE

The International Engineering Alliance is pleased to announce that all Accords and Agreements have approved revisions to its Graduate Attributes and Professional Competencies (GAPC) international benchmark. The review, supported by UNESCO, was undertaken by a joint IEA-WFEO Working Group who engaged extensively with IEA signatories, WFEO members and WFEO partners representing academics, industry and women globally. They reflect requirements for new technologies and engineering disciplines, new pedagogies and values such as sustainable development, diversity and inclusion and ethics. They are well positioned to support the engineering role in building a more sustainable and equitable world.

Our thanks to UNESCO and WFEO for their constant support and endorsement and to the GAPC Working Group members, who commenced this work three years ago and who have worked tirelessly to bring this to fruition.

VERSION: 2021.1

The documents presented in this compendium are current as of 21 June 2021.

IEA Constituent Agreements

Washington Accord	International Professional Engineers Agreement
Sydney Accord	International Engineering Technologists Agreement
Dublin Accord	APEC Engineer Agreement
	Agreement for International Engineering Technicians

Graduate Attributes and Professional Competences

Approved Version 4: 21 June 2021

This document is available through the IEA website: http://www.ieagreements.org

Executive Summary

Many accrediting bodies for engineering qualifications have developed outcomes-based criteria for evaluating programs. Similarly, many engineering regulatory bodies have developed or are in the process of developing competence-based standards for registration. Educational and professional accords for mutual recognition of qualifications and registration have developed statements of graduate attributes and professional competence profiles. This document, which is a revised version that takes into account the present-day state of engineering activities, presents the background to these developments, their purpose, and the methodology and limitations of the statements. After defining general range statements that allow the competences of the different categories to be distinguished, the paper presents the graduate attributes and professional competence profiles for three professional tracks: engineer, engineering technologist, and engineering technician.

1 Introduction

Engineering is an activity that is essential to meeting the needs of people, economic development and the provision of services to society. Engineering involves the purposeful application of mathematical and natural sciences and a body of engineering knowledge, technology and techniques. Engineering seeks to produce solutions of which the effects are predicted to the greatest degree possible, in often uncertain contexts. While bringing benefits, engineering activity has potential adverse consequences. Engineering therefore must be carried out responsibly and ethically, use available resources efficiently, be economic, safeguard health and safety, be environmentally sound and sustainable and generally manage risks throughout the entire lifecycle of a system. The United Nations Sustainable Development Goals present targets for 2030. Engineers are vital contributors for making progress towards these goals.

Typical engineering activity requires several roles including those of the engineer, engineering technologist and engineering technician, recognized as professional registration categories in many jurisdictions[1]. These roles are defined by their distinctive competences

[1] The terminology used in this document uses the term *engineering* as an activity in a broad sense and *engineer* as shorthand for the various types of professional and chartered engineer. It is recognized that *engineers*,

and their level of responsibility to the public. There is a degree of overlap between roles. The distinctive competences, together with their educational underpinnings, are defined in sections 4 to 6 of this document.

The development of an engineering professional in any of the categories is an ongoing process with important identified stages. The first stage is the attainment of an *accredited educational qualification*, the graduate stage. The fundamental purpose of *engineering education* is to build a knowledge base and attributes to enable the graduate to continue learning and to proceed to formative development that will develop the competences required for independent practice. The second stage, following a period of formative development, is *professional registration*. The fundamental purpose of formative development is to build on the educational base to develop the competences required for independent practice in which the graduate works with engineering practitioners and progresses from an assisting role to taking more individual and team responsibility until competence can be demonstrated at the level required for registration. Once registered, the practitioner must maintain and expand competence.

For engineers, engineering technologists, and engineering technicians, a third milestone is to qualify for the *international register* held by the various jurisdictions. In addition, engineers, technologists and technicians are expected to maintain and enhance competence throughout their working lives.

Several international accords provide for recognition of graduates of accredited programs of each signatory by the remaining signatories. The Washington Accord (WA) provides for mutual recognition of programs accredited for the engineer track. The Sydney Accord (SA) establishes mutual recognition of accredited qualifications for engineering technologist. The Dublin Accord (DA) provides for mutual recognition of accredited qualifications for engineering technicians. These accords are based on the principle of substantial equivalence rather than exact correspondence of content and outcomes. This document records the signatories' consensus on the attributes of graduates for each accord.

Similarly, the International Professional Engineers Agreement[2] (IPEA), the International Engineering Technologists Agreement[3] (IETA), and the Agreement for International Engineering Technicians (AIET) provide mechanisms to support the recognition of a professional registered in one signatory jurisdiction obtaining recognition in another. The signatories have formulated consensus competence profiles for the registration and these are recorded in this document.

Section 2 gives the background to the graduate attributes presented in section 5. Section 3 provides background to the professional competence profiles presented in section 6. General range statements are presented in section 4. The graduate attributes are presented in section 5 while the professional competence profiles are defined in section 6. Appendix A defines terms used in this document. Appendix B sketches the origin and development history of the graduate attributes and professional competence profiles.

2 Graduate Attributes

This section gives background to the graduate attributes presented in section 5.

Purpose of Graduate Attributes

Graduate attributes form a set of individually assessable outcomes that are the components indicative of the graduate's potential to acquire competence to practise at the appropriate

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engineering technologists, and *engineering technicians* may have specific titles or designations and differing legal empowerment or restrictions within individual jurisdictions.

level. The graduate attributes are exemplars of the attributes expected of graduate from an accredited program. Graduate attributes are clear, succinct statements of the expected capability, qualified if necessary, by a range indication appropriate to the type of program.

The graduate attributes are intended to assist Signatories and Provisional Members to develop or review their outcomes-based accreditation criteria for use by their respective jurisdictions. Graduate attributes also guide bodies in developing or revising their accreditation systems with a view to seeking signatory status.

Graduate attributes are defined for educational qualifications in the engineer, engineering technologist and engineering technician tracks. The graduate attributes serve to identify the distinctive characteristics as well as areas of commonality between the expected outcomes of different types of programs.

Limitation of Graduate Attributes

Each signatory defines the standards for the relevant track (engineer, engineering technologist or engineering technician) against which engineering educational programs are accredited. Each educational level accord is based on the principle of *substantial equivalence*; that is, programs are not expected to have identical outcomes and content but rather produce graduates who could enter employment and be fit to undertake a program of training and experiential learning leading to professional competence and registration. The Graduate Attributes provide a point of reference for bodies to describe the outcomes of substantially equivalent qualification. The Graduate Attributes do not, in themselves, constitute an "international standard" for accredited qualifications but provide a widely accepted common reference or benchmark for bodies to describe the outcomes of substantially equivalent qualifications.

Graduate Attributes may be accepted for use within a jurisdiction or adapted to accommodate the context and any specific requirements of the jurisdiction. Where a signatory has adapted or developed their own graduate attributes, it is expected that there is alignment to these Graduate Attributes.

The term graduate does not imply a particular type of qualification but rather the exit level of the qualification, be it a degree or diploma.

Graduate Attributes and the Quality of Programs

The Washington, Sydney and Dublin Accords "recognize the substantial equivalence of … programs satisfying the academic requirements for practice …" for engineers, engineering technologists and engineering technicians respectively. The Graduate Attributes are assessable outcomes, supported by level statements, developed by the signatories that give confidence that the educational objectives of programs are being achieved. The quality of a program depends not only on the stated objectives and attributes to be assessed but also on the program design, resources committed to the program, the teaching and learning process and assessment of students, including confirmation that the graduate attributes are satisfied. The Accords therefore base the judgement of the substantial equivalence of programs accredited by signatories on both the Graduate Attributes and the best practice indicators for evaluating program quality listed in the Accords' Rules and Procedures[2].

[2] Accord Rules and Procedures. June 2018, section C.4.5. Available at www.ieagreements.org.

Scope and Organization of Graduate Attributes

The graduate attributes are organized using eleven headings shown in section 5.2. Each heading identifies the differentiating characteristic that allows the distinctive roles of engineers, technologists and technicians to be distinguished by range information.

For each attribute, statements are formulated for engineer, engineering technologist and engineering technician using a common stem, with ranging information appropriate to each educational track defined in sections 4.1 and 5.1. For example, for the **Engineering Knowledge** attribute:

> **Common Stem:** Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization …
>
> **Engineer Range:** … as specified in the engineer knowledge profile to develop solutions to complex engineering problems.
>
> **Engineering Technologist Range:** … as specified in the engineering technologist knowledge profile to defined and applied engineering procedures, processes, systems or methodologies.
>
> **Engineering Technician Range:** … as specified in the engineering technician knowledge profile to wide practical procedures and practices.

The resulting statements are shown below for this example:

Engineer Graduate	Engineering Technologist Graduate	Engineering Technician Graduate
Apply knowledge of mathematics, science, computing and engineering fundamentals and an engineering specialization as specified in WK1-WK4 respectively to develop solutions to complex engineering problems.	Apply knowledge of mathematics, science, computing and engineering fundamentals and an engineering specialization as specified in SK1-SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies.	Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization as specified in DK1-DK4 respectively to wide practical procedures and practices.

The range qualifier in several attribute statements uses the notions of *complex engineering problems*, *broadly-defined engineering problems* and *well-defined engineering problems*. These shorthand level descriptors are defined in section 4.1.

The attributes are chosen to be universally applicable and reflect acceptable minimum standards and be capable of objective measurement. While all attributes are important, individual attributes are not necessarily of equal weight. Attributes are selected that are expected to be valid for extended periods and changed infrequently only after considerable debate. Attributes may depend on information external to this document, for example generally accepted principles of ethical conduct.

The full set of graduate attribute definitions is given in section 5.

Contextual Interpretation

The graduate attributes are stated generically and are applicable to all engineering disciplines. In interpreting the statements within a disciplinary context, individual statements

may be amplified and given particular emphasis but they must not be altered in substance or individual elements ignored.

Best Practice in Application of Graduate Attributes

The attributes of Accord programs are defined as a *knowledge profile*, which is an indicated volume of learning and the attributes against which graduates must be able to perform. The requirements are stated without reference to the design of programs that would achieve the requirements. Providers therefore are free to design programs with different detailed structures, learning pathways and modes of delivery. Evaluation of individual programs is the concern of national accreditation systems.

3 Professional Competence Profiles

Purpose of Professional Competence Profiles

A professionally or occupationally *competent person* has the attributes necessary to perform the activities within the profession or occupation to the standards expected in independent employment or practice. The *professional competence profiles* for each professional category record the elements of competence necessary for performance that the professional is expected to be able to demonstrate in a holistic way at the stage of attaining registration.

Professional competence can be described using a set of attributes corresponding largely to the graduate attributes, but with different emphases. For example, at the professional level, the ability to take responsibility in a real-life situation is essential. Unlike the graduate attributes, professional competence is more than a set of attributes that can be demonstrated individually. Rather, competence must be assessed holistically.

Scope and Organization of Professional Competence Profiles

The professional competence profiles are written for each of the three categories: engineer, engineering technologist and engineering technician at the point of registration[3]. Each profile consists of thirteen elements. Individual elements are formulated around a differentiating characteristic using a stem and modifier, similar to the method used for the graduate attributes described in section 2.3.

The stems are common to all three categories and the range modifiers allow distinctions and commonalities between categories to be identified. Like their counterparts in the graduate attributes, the range statements use the notions of complex engineering problems, broadly-defined engineering problems and well-defined engineering problems defined in section 4.1. At the professional level, a classification of engineering activities is used to define ranges and to distinguish between categories. Engineering activities are classified as *complex*, *broadly-defined* or *well-defined*. These shorthand level descriptors are defined in section 4.2.

Limitations of Professional Competence Profile

As in the case of the graduate attributes, the professional competence profiles are not prescriptive in detail but rather reflect the essential elements that would be present in competence standards.

The professional competence profiles do not specify performance indicators or how the above items should be interpreted in assessing evidence of competence from different areas of practice or for different types of work. Section 3.4 examines contextual interpretation.

[3] Requirements for the IEPA, IETA, and AIET International Registers call for enhanced competence and responsibility.

Each jurisdiction may define *performance indicators*; that is, actions on the part of the candidate that demonstrate competence. For example, a design competence may be evidenced by the following performances:

1: Identify and analyse a design/planning requirement and draw up a detailed requirements specification
2: Synthesise a range of potential solutions to problem or approaches to project execution
3: Evaluate potential approaches to meet requirements and their possible impacts
4: Fully develop design of selected option
5: Produce design documentation for implementation

Contextual Interpretation

Although competence can be demonstrated in different areas of practice and types of work, competence statements are independent of, and separate to, any specific discipline. Thus the competence statements accommodate different types of work (for example, design, research and development and engineering management) by using the broad phases in the cycle of engineering activity (problem analysis, synthesis, implementation, operation and evaluation) together with the management attributes needed. The competence statements also include the personal attributes needed for competent performance irrespective of specific local requirements: communication, ethical practice, judgement, taking responsibility and the protection of society.

The professional competence profiles are stated generically and are applicable to all engineering disciplines. The application of a competence profile may require amplification in different regulatory, disciplinary, occupational or environmental contexts. In interpreting the statements within a particular context, individual statements may be amplified and given particular emphasis but must not be altered in substance or ignored.

Mobility between Professional Categories

The Graduate Attributes and Professional Competence for each of the three categories of engineering practitioner (engineer, engineering technologist and engineering technician) define the benchmark route or vertical progression in each category. This document does not address the movement of individuals between categories, a process that usually requires additional education, training and experience. The Graduate Attributes and Professional Competences, through their definitions of level of demand, knowledge profile and outcomes to be achieved, allow a person planning such an attainment to judge the further learning and experience that will be required. The education and registration requirements of the jurisdiction should be examined for specific requirements.

4 Common Range and Contextual Definitions

Range of Problem Identification and Solving

References included are to the Knowledge and Attitude Profile in 5.1

In the context of both Graduate Attributes and Professional Competences:			
Attribute	***Complex Engineering Problems*** have characteristic WP1 and some or all of WP2 to WP7*:*	***Broadly-defined Engineering Problems*** **have characteristic SP1 and some or all of SP2 to SP7*:***	***Well-defined Engineering Problems*** have characteristic DP1 and some or all of DP2 to DP7*:*
Depth of Knowledge Required	**WP1:** Cannot be resolved without in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 which allows a fundamentals-based, first principles analytical approach	**SP1:** Cannot be resolved without engineering knowledge at the level of one or more of SK 4, SK5, and SK6 supported by SK3 with a strong emphasis on the application of developed technology	**DP1:** Cannot be resolved without extensive practical engineering knowledge as reflected in DK5 and DK6 supported by theoretical knowledge defined in DK3 and DK4
Range of conflicting requirements	**WP2:** Involve wide-ranging and/or conflicting technical, non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements	**SP2:** Involve a variety of conflicting technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements	**DP2:** Involve several technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements
Depth of analysis required	**WP3:** Have no obvious solution and require abstract thinking, creativity and originality in analysis to formulate suitable models	**SP3:** Can be solved by application of well-proven analysis techniques and models	**DP3:** Can be solved in standardized ways
Familiarity of issues	**WP4:** Involve infrequently encountered issues or novel problems	**SP4:** Belong to families of familiar problems which are solved in well-accepted ways	**DP4:** Are frequently encountered and thus familiar to most practitioners in the practice area
Extent of applicable codes	**WP5:** Address problems not encompassed by standards and codes of practice for professional engineering	**SP5:** Address problems that may be partially outside those encompassed by standards or codes of practice	**DP5:** Addresses problems that are encompassed by standards and/or documented codes of practice
Extent of stakeholder involvement and conflicting requirements	**WP6:** Involve collaboration across engineering disciplines, other fields, and/or diverse groups of stakeholders with widely varying needs	**SP6:** Involve different engineering disciplines and other fields with several groups of stakeholders with differing and occasionally conflicting needs	**DP6:** Involve a limited range of stakeholders with differing needs
Interdependence	**WP 7:** Address high level problems with many components or sub-problems that	**SP7:** Address components of systems within complex engineering problems	**DP7:** Address discrete components of engineering systems

	may require a systems approach		

Range of Engineering Activities

Attribute	Complex Activities	Broadly-defined Activities	Well-defined Activities
Preamble	**Complex activities** means (*engineering)* activities or projects that have some or all of the following characteristics:	**Broadly defined activities** means (*engineering)* activities or projects that have some or all of the following characteristics:	**Well-defined activities** means *(engineering)* activities or projects that have some or all of the following characteristics:
Range of resources	**EA1:** Involve the use of diverse resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software	**TA1:** Involve a variety of resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software	**NA1:** Involve a limited range of resources for example people, data and information, natural, financial and physical resources and/or appropriate technologies
Level of interactions	**EA2:** Require optimal resolution of interactions between wide-ranging and/or conflicting technical, non-technical, and engineering issues	**TA2:** Require the best possible resolution of occasional interactions between technical, non-technical, and engineering issues, of which few are conflicting	**NA2:** Require the best possible resolution of interactions between limited technical, non-technical, and engineering issues
Innovation	**EA3:** Involve creative use of engineering principles, innovative solutions for a conscious purpose, and research-based knowledge	**TA3:** Involve the use of new materials, techniques or processes in non-standard ways	**NA3:** Involve the use of existing materials techniques, or processes in modified or new ways
Consequences to society and the environment	**EA4:** Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation	**TA4:** Have reasonably predictable consequences that are most important locally, but may extend more widely	**NA4:** Have predictable consequences with relatively limited and localized impact.
Familiarity	**EA5:** Can extend beyond previous experiences by applying principles-based approaches	**TA5:** Require a knowledge of normal operating procedures and processes	**NA5:** Require a knowledge of practical procedures and practices for widely-applied operations and processes

5 Accord program profiles

The following tables provide profiles of graduates of three types of tertiary education engineering programs. See section 4 for definitions of complex engineering problems, broadly-defined engineering problems, and well-defined engineering problems.

Knowledge and Attitude Profile

A Washington Accord program provides:	**A Sydney Accord program** provides:	**A Dublin Accord program** provides:
WK1: A systematic, theory-based understanding of the **natural sciences** applicable to the discipline and awareness of relevant **social sciences**	**SK1:** A systematic, theory-based understanding of the **natural sciences** applicable to the sub-discipline and awareness of relevant **social sciences**	**DK1:** A descriptive, formula-based understanding of the **natural sciences** applicable in a sub-discipline and awareness of directly relevant **social sciences**
WK2: Conceptually-based **mathematics**, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline	**SK2:** Conceptually-based **mathematics**, numerical analysis, , data analysis, statistics and formal aspects of computer and information science to support detailed consideration and use of models applicable to the sub-discipline	**DK2:** Procedural **mathematics**, numerical analysis, statistics applicable in a sub-discipline
WK3: A systematic, theory-based formulation of **engineering fundamentals** required in the engineering discipline	**SK3:** A systematic, theory-based formulation of **engineering fundamentals** required in an accepted sub-discipline	**DK3:** A coherent procedural formulation of **engineering fundamentals** required in an accepted sub-discipline
WK4: Engineering **specialist knowledge** that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline.	**SK4:** Engineering **specialist knowledge** that provides theoretical frameworks and bodies of knowledge for an accepted sub-discipline	**DK4:** Engineering **specialist knowledge** that provides the body of knowledge for an accepted sub-discipline
WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports **engineering design and operations** in a practice area	**SK5: :** Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports **engineering design and operations** using the technologies of a practice area	**DK5:** Knowledge that supports **engineering design and operations** based on the techniques and procedures of a practice area
WK6: Knowledge of **engineering practice** (technology) in the practice areas in the engineering discipline	**SK6:** Knowledge of **engineering technologies** applicable in the sub-discipline	**DK6:** Codified **practical engineering knowledge** in recognized practice area.

WK7: Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development*	**SK7 Knowledge** of the role of technology in society and identified issues in applying engineering technology, such as public safety and sustainable development*	**DK7: Knowledge** of issues and approaches in engineering technician practice, such as public safety and sustainable development*
WK8: Engagement with selected knowledge in the current **research literature** of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues	**SK8** Engagement with the current **technological literature** of the discipline and awareness of the power of critical thinking	**DK8:** Engagement with the current **technological literature** of the practice area
WK9: Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes	**SK9: Ethics, inclusive behavior and conduct.** Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes	**DK9: Ethics, inclusive behavior and conduct.** Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes
*Represented by the 17 UN Sustainable Development Goals (UN-SDG)		
A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 4 to 5 years of study, depending on the level of students at entry.	A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 3 to 4 years of study, depending on the level of students at entry.	A program that builds this type of knowledge and attitude and develops the base attributes listed below is typically achieved in 2 to 3 years of study, depending on the level of students at entry.

Graduate Attribute Profiles

References included are to the Knowledge and Attitude Profile in 5.1.

Differentiating Characteristic	Engineer Graduate	Engineering Technologist Graduate	Engineering Technician Graduate
Engineering Knowledge: Breadth, depth and type of knowledge, both theoretical and practical	**WA1:** Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex engineering problems	**SA1:** Apply knowledge of mathematics, natural science, computing and engineering fundamentals and an engineering specialization as specified in SK1 to SK4 respectively to defined and applied engineering procedures, processes, systems or methodologies.	**DA1:** Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in DK1 to DK4 respectively to wide practical procedures and practices.
Problem Analysis Complexity of analysis	**WA2:** Identify, formulate, research literature and analyze *complex* engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development* (WK1 to WK4)	**SA2:** Identify, formulate, research literature and analyze *broadly-defined* engineering problems reaching substantiated conclusions using analytical tools appropriate to the discipline or area of specialisation. (SK1 to SK4)	**DA2:** Identify and analyze *well-defined* engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity. (DK1 to DK4)
Design/development of solutions: Breadth and uniqueness of engineering problems i.e., the extent to which problems are original and to which solutions have not previously been identified or codified	**WA3:** Design creative solutions for *complex* engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5)	**SA3:** Design solutions for *broadly-defined* engineering technology problems and *contribute to* the design of systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (SK5)	**DA3:** Design solutions for *well-defined* technical problems and *assist with* the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety as well as cultural, societal, and environmental considerations as required (DK5)

Differentiating Characteristic	Engineer Graduate	Engineering Technologist Graduate	Engineering Technician Graduate
Investigation: Breadth and depth of investigation and experimentation	**WA4:** Conduct investigations of *complex* engineering problems using research methods including research-based knowledge, design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8)	**SA4:** Conduct investigations of *broadly-defined* engineering problems; locate, search and select relevant data from codes, data bases and literature, design and conduct experiments to provide valid conclusions (SK8)	**DA4:** Conduct investigations of *well-defined* problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)
Tool Usage: Level of understanding of the appropriateness of technologies and tools	**WA5:** Create, select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to *complex* engineering problems (WK2 and WK6)	**SA5:** Select and apply, and recognize limitations of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to *broadly-defined* engineering problems (SK2 and SK6)	**DA5:** Apply appropriate techniques, resources, and modern computing, engineering, and IT tools to *well-defined* engineering problems, with an awareness of the limitations. (DK2 and DK6)
The Engineer and the World: Level of knowledge and responsibility for sustainable development	**WA6:** When solving complex engineering problems, analyze and evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (WK1, WK5, and WK7)	**SA6:** When solving broadly-defined engineering problems, analyze and evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (SK1, SK5, and SK7)	**DA6:** When solving well-defined engineering problems, evaluate sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment (DK1, DK5, and DK7)
Ethics: Understanding and level of practice	**WA7:** Apply ethical principles and commit to professional ethics and norms of engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9)	**SA7:** Understand and commit to professional ethics and norms of engineering technology practice including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (SK9)	**DA7:** Understand and commit to professional ethics and norms of technician practice including compliance with relevant laws. Demonstrate an understanding of the need for diversity and inclusion (DK9)
Individual and Collaborative Team work: Role in and diversity of team	**WA8:** Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (WK9)	**SA8:** Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (SK9)	**DA8:** Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multi-disciplinary, face-to-face, remote and distributed settings (DK9)

Differentiating Characteristic	Engineer Graduate	Engineering Technologist Graduate	Engineering Technician Graduate
Communication: Level of communication according to type of activities performed	**WA9:** Communicate effectively and inclusively on *complex* engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.	**SA9:** Communicate effectively and inclusively on *broadly-defined* engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, taking into account cultural, language, and learning differences.	**DA9:** Communicate effectively and inclusively on *well-defined* engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions
Project Management and Finance: Level of management required for differing types of activity	**WA10:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.	**SA10:** Apply knowledge and understanding of engineering management principles and apply these to one's own work, as a member or leader in a team and to manage projects in multidisciplinary environments.	**DA10:** Demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments
Lifelong learning: Duration and manner	**WA11:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8)	**SA11:** Recognize the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of new specialist technologies (SK8)	**DA11:** Recognize the need for, and have the ability for independent updating in the face of specialized technical knowledge (DK8)
*Represented by the 17 UN Sustainable Development Goals (UN-SDG)			

6 Professional Competence Profiles

To meet the minimum standard of competence a person must demonstrate that they are able to practice competently, within a practice area, to the standard expected of a reasonable Professional Engineer/Engineering Technologist/Engineering Technician.

The extent to which the person is able to perform each of the following elements in practice area must be taken into account in assessing whether or not the individual meets the overall standard.

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Comprehend and apply universal knowledge: Breadth and depth of education and type of knowledge	**EC1:** Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice	**TC1:** Comprehend and apply the knowledge embodied in widely accepted and applied procedures, processes, systems or methodologies	**NC1:** Comprehend and apply knowledge embodied in standardized practices
Comprehend and apply local knowledge: Type of local knowledge	**EC2:** Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice specific to the jurisdiction of practice	**TC2:** Comprehend and apply the knowledge embodied procedures, processes, systems or methodologies that is specific to the jurisdiction of practice	**NC2:** Comprehend and apply knowledge embodied in standardized practices specific to the jurisdiction of practice.
Problem analysis: Complexity of analysis	**EC3:** Define, investigate and analyze complex problems using data and information technologies where applicable	**TC3:** Identify, clarify, and analyze broadly-defined problems using the support of computing and information technologies where applicable	**NC3:** Identify, state and analyze well-defined problems using the support of computing and information technologies where applicable
Design and development of solutions: Nature of the problem and uniqueness of the solution	**EC4:** Design or develop solutions to complex problems considering a variety of perspectives and taking account of stakeholder views	**TC4:** Design or develop solutions to broadly-defined problems considering a variety of perspectives.	**NC4:** Design or develop solutions to well-defined problems
Evaluation: Type of activity	**EC5:** Evaluate the outcomes and impacts of complex activities	**TC4:** Evaluate the outcomes and impacts of broadly defined activities	**NC5:** Evaluate the outcomes and impacts of well-defined activities

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
Protection of society: Types of activity and responsibility to consider sustainable outcomes	**EC6:** Recognize the foreseeable economic, social, and environmental effects of complex activities and seek to achieve sustainable outcomes*	**TC6:** Recognize the foreseeable economic, social, and environmental effects of broadly-defined activities and seek to achieve sustainable outcomes*	**NC6:** Recognize the foreseeable economic, social, and environmental effects of well-defined activities and seek to achieve sustainable outcomes*
Legal, regulatory, and cultural: No differentiation in this characteristic	**EC7:** Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities	**TC7:** Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities	**NC7:** Meet all legal, regulatory, and cultural requirements and protect public health and safety in the course of all activities
Ethics: No differentiation in this characteristic	**EC8:** Conduct activities ethically	**TC8:** Conduct activities ethically	**NC8:** Conduct activities ethically
Manage engineering activities: Types of activity	**EC9:** Manage part or all of one or more complex activities	**TC9:** Manage part or all of one or more broadly-defined activities	**NC9:** Manage part or all of one or more well-defined activities
Communication and Collaboration: Requirement for inclusive communications. No differentiation in this characteristic	**EC10:** Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.	**TC10:** Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.	**NC10:** Communicate and collaborate using multiple media clearly and inclusively with a broad range of stakeholders in the course of all activities.
Continuing Professional Development (CPD) and Lifelong learning: Preparation for and depth of continuing learning. No differentiation in this characteristic	**EC11:** Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.	**TC11:** Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.	**NC11:** Undertake CPD activities to maintain and extend competences and enhance the ability to adapt to emerging technologies and the ever-changing nature of work.
Judgement: Level of	**EC12:** Recognize complexity and	**TC12:** Choose appropriate	**NC12:** Choose and apply appropriate

Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
developed knowledge, and ability and judgement in relation to type of activity	assess alternatives in light of competing requirements and incomplete knowledge. Exercise sound judgement in the course of all complex activities	technologies to deal with broadly defined problems. Exercise sound judgement in the course of all broadly-defined activities	technical expertise. Exercise sound judgement in the course of all well-defined activities
Responsibility for decisions: Type of activity for which responsibility is taken	**EC13:** Be responsible for making decisions on part or all of complex activities	**TC13:** Be responsible for making decisions on part or all of one or more broadly defined activities	**NC13:** Be responsible for making decisions on part or all of all of one or more well-defined activities
*Represented by the 17 UN Sustainable Development Goals (UN-SDG)			

Appendix A: Definitions of terms

Note: These definitions apply to terms used in this document.

Awareness: Recognizing the context and implications while using or applying what has been learned. The demonstration of awareness can be more varied than a demonstration of knowledge. Asking the right questions, including among the assumptions made, complying with or respecting when faced with a situation may be acceptable demonstrations.

Branch of engineering: a generally-recognized, major subdivision of engineering such as the traditional *disciplines* of Chemical, Civil, or Electrical Engineering, or a cross-disciplinary field of comparable breadth including combinations of engineering fields, for example Mechatronics, and the application of engineering in other fields, for example Bio-Medical Engineering.

Broadly-defined engineering problems: a class of problem with characteristics defined in section 4.1.

Broadly-defined engineering activities: a class of activities with characteristics defined in section 4.2.

Complementary (contextual) knowledge: Disciplines other than engineering, basic and mathematical sciences, that support engineering practice, enable its impacts to be understood and broaden the outlook of the engineering graduate.

Complex engineering problems: a class of problem with characteristics defined in section 4.1.

Complex engineering activities: a class of activities with characteristics defined in section 4.2.

Continuing Professional Development: the systematic, accountable maintenance, improvement and broadening of knowledge and skills, and the development of personal qualities necessary for the execution of professional and technical duties throughout an engineering practitioner's career.

Engineering sciences: include engineering fundamentals that have roots in the mathematical and physical sciences, and where applicable, in other natural sciences, but extend knowledge and develop models and methods in order to lead to applications and solve problems, providing the knowledge base for engineering specializations.

Engineering design knowledge: Knowledge that supports engineering design in a practice area, including codes, standards, processes, empirical information, and knowledge reused from past designs.

Engineering discipline: synonymous with *branch of engineering.*

Engineering fundamentals: a systematic formulation of engineering concepts and principles based on mathematical and natural sciences to support applications.

Engineering management: the generic management functions of planning, organising, leading and controlling, applied together with engineering knowledge in contexts including the management of projects, construction, operations, maintenance, quality, risk, change and business.

Engineering problem: is a problem that exists in any domain that can be solved by the application of engineering knowledge and skills and generic competences.

Engineering practice area: a generally accepted or legally defined area of engineering work or engineering technology.

Engineering speciality or specialization: a generally-recognized practice area or major subdivision within an engineering discipline, for example Structural and Geotechnical Engineering within Civil Engineering; the extension of engineering fundamentals to create theoretical frameworks and bodies of knowledge for engineering practice areas.

Engineering technology: is an established body of knowledge, with associated tools, techniques, materials, components, systems or processes that enable a family of practical applications and that relies for its development and effective application on engineering knowledge and competence.

Forefront of the professional discipline/branch[4]: defined by advanced practice in the specialisations within the discipline.

Formative development: the process that follows the attainment of an accredited education program that consists of training, experience and expansion of knowledge.

Knowledge: Recognizing and comprehending terminology, facts, methods, trends, classifications, structures, or theories. It involves learning as well as demonstrating what has been learned. The demonstration of a specific knowledge is invariably by means of work done based on that knowledge.

Manage: means planning, organising, leading and controlling in respect of risk, project, change, financial, compliance, quality, ongoing monitoring, control and evaluation.

Mathematical sciences: mathematics, numerical analysis, statistics and aspects of computer science cast in an appropriate mathematical formalism.

Natural sciences: Provide, as applicable in each engineering discipline or practice area, an understanding the physical world including physics, mechanics, chemistry, earth sciences and the biological sciences,

Practice area: *in the educational context:* synonymous with generally-recognized engineering speciality; *at the professional level:* a generally recognized or distinctive area of knowledge and expertise developed by an engineering practitioner by virtue of the path of education, training and experience followed.

Solution: means an effective proposal for resolving a problem, taking into account all relevant technical, legal, social, cultural, economic and environmental issues and having regard to the need for sustainability.

Subdiscipline: Synonymous with *engineering speciality*.

Substantial equivalence: applied to educational programs means that two or more programs, while not meeting a single set of criteria, are both acceptable as preparing their respective graduates to enter formative development toward registration.

Well-defined engineering problems: a class of problem with characteristics defined in section 4.1.

Well-defined engineering activities: a class of activities with characteristics defined in section 4.2.

[4] This should be distinguished from: **Forefront of knowledge in an engineering discipline/speciality**: defined by current published research in the discipline or speciality.

Appendix B: History of Graduate Attributes and Professional Competence Profiles

The signatories to the Washington Accord recognized the need to describe the attributes of a graduate of a Washington Accord accredited program. Work was initiated at its June 2001 meeting held at Thornybush, South Africa. At the International Engineering Meetings (IEM) held in June 2003 at Rotorua, New Zealand, the signatories to the Sydney Accord and the Dublin Accord recognized similar needs. The need was recognized to distinguish the attributes of graduates of each type of program to ensure fitness for their respective purposes.

The Engineers Mobility Forum (EMF) and Engineering Technologist Mobility Forum (ETMF)[5] have created international registers in each jurisdiction with current admission requirements based on registration, experience and responsibility carried. The mobility agreements recognize the future possibility of competence-based assessment for admission to an international register. At the 2003 Rotorua meetings, the mobility fora recognized that many jurisdictions are in the process of developing and adopting competence standards for professional registration. The EMF and the ETMF therefore resolved to define assessable sets of competences for engineer and technologist. While no comparable mobility agreement exists for technicians, the development of a corresponding set of standards for engineering technicians was felt to be important to have a complete description of the competences of the engineering team.

Version 1

A single process was therefore agreed to develop the three sets of graduate attributes and three professional competence profiles. An International Engineering Workshop (IEWS) was held by the three educational accord and the two mobility fora in London in June 2004 to develop statements of Graduate Attributes and International Register Professional Competence Profiles for the Engineer, Engineering Technologist and Engineering Technician categories. The resulting statements were then opened for comment by the signatories. The comments received called for minor changes only.

The Graduate Attributes and Professional Competences were adopted by the signatories of the five agreements in June 2005 at Hong Kong as version 1.1.

Version 2

A number of areas of improvement in the Graduate Attributes and Professional Competences themselves and their potential application were put to the meetings of signatories in Washington DC in June 2007. A working group was set up to address the issues. The IEA workshop held in June 2008 in Singapore considered the proposals of the working group and commissioned the Working Group to make necessary changes with a view to presenting Version 2 of the document for approval by the signatories at their next general meetings. Version 2 was approved at the Kyoto IEA meetings, 15-19 June 2009.

Version 3

Between 2009 and 2012 a number of possible improvements to the graduate attributes were recorded. During 2012 signatories performed an analysis of gaps between their respective standards and the Graduate Attribute exemplars and by June 2013 most signatories reported substantial equivalence of their standards to the Graduate Attributes. This will be further examined in periodic monitoring reviews in 2014 to 2019. In this process a number of improvements to the wording of the Graduate Attributes and supporting definitions were identified. The signatories to the Washington, Sydney and Dublin Accords approved the changes resulting in this Version 3 at their meetings in Seoul 17-21 June 2013. Signatories stated that the objectives of the changes were to clarify aspects of the Graduate Attribute exemplar. There was no intent to raise the standard. The main changes were as follows:

- New Section 2.3 inserted;
- Range of problem solving in section 4.1 linked to the Knowledge Profiles in section 5.1 and duplication removed;

[5] Now the IEPA and IETA respectively.

- Graduate Attributes in section 5.2: cross-references to Knowledge Profile elements inserted; improved wording in attributes 6, 7 and 11;
- Appendix A: definitions of *engineering management* and *forefront of discipline* added.

Version 4

An agreement was signed at the IEAM 2015 for International Engineering Technicians. The Agreement for International Engineering Technicians (AIET) establishes an international benchmark standard for a practicing qualified engineering technician. An agreement now exists for technicians so that the standards included among Professional Competence Profiles for an engineering technician can be applied.

A UNESCO WFEO IEA Working Group was established in November 2019 following the renewal of the WFEO-IEA MoU and the Declaration on Engineering Education that was made in Melbourne at WEC2019. The Working Group has reviewed the Graduate Attributes and Professional Competences in order to ensure that they reflect contemporary values and employer needs, cover diversity and inclusion and ethics to reflect current and emerging thinking, address the intellectual agility, creativity and innovation required of engineering decision making as well as equip engineering professionals of the future to incorporate the practices that advance the United Nations Sustainable Development Goals (UN SDG). The main changes that resulted from the surveys, research, dissemination and consultation efforts during 2019-2021 were as follows:

- There were changes in all tables on Range of Problem Solving, Range of Engineering Activities, Knowledge and Attitude Profile, Graduate Attributes, and Professional Competence Profiles. These consisted of additions of new attributes as well as enhancements of the already existing ones. Some improvements in the wording and in clarity has also been a concern.
- Knowledge and Attitude Profile, Graduate Attributes, and Professional Competence Profiles Tables now refer to UN SDG. These references are intended to provide context for curriculum designers and for professional engineers seeking registration. They represent an internationally accepted example of how sustainability issues can be concisely understood and presented.
- Two rows on “Consequences, Judgement” at the end of Table 4.1 Range of Problem Solving that refer to Professional Competences are deleted as no differentiation was deemed necessary among the three categories.
- A new row of “Ethics, inclusive behavior and conduct” is introduced in the Knowledge Profile table, the name of which has been changed to the Knowledge and Attitude Profile.
- The breadth required of engineering education has been widened to emphasize digital literacy, data analysis, UN SDG, knowledge of relevant social sciences.
- Two rows of Graduate Attributes on “The Engineer and Society” and “Environment and Sustainability,” which have been based on the same knowledge profile have been combined under the heading “The Engineer and the World,” also supplementing the required knowledge profile.
- Knowledge and awareness of ethics, diversity, and inclusion have been emphasized.
- Critical thinking, innovation, emerging technologies, and lifelong learning requirements have been highlighted.
- The necessitated similar changes to Professional Competences have also been made.

The proposed revisions were introduced and discussed by member organizations through a series of extensive consultations, also through webinars organized by WFEO, in IEAM 2020 by IEA members, and via consultation web pages.

Document & Version Control

Version/Effective From	Summary of Changes	Approved	Minutes
2021.1 / Effective from 21 June 2021	Comprehensive review undertaken by joint working group to revise previous version (2013).	Approved by IEA Members (Signatories and Authorised Members) at IEAM June 2021 Use of WFEO & UNESCO Logos approved via email following meetings.	IEA21- IEA Forum Session

APPENDIX C

Delegation of US Engineering State Board Members

05 February – 08 February 2024

US Delegation Programme Book

Contents

Dear Delegates,

Welcome to the UK! We are delighted that you have joined us for what we are sure will be an informative and productive mission.

The Prime Minister was pleased to announce the start of mutual recognition negotiations between NCEES and the Engineering Council during his press conference with President Biden at the White House in June 2023. In hosting this delegation, we're excited to provide an opportunity for you to learn about the UK's engineering sector and licensure process. Likewise, UK stakeholders will be interested to hear about processes in your respective states, the current challenges and opportunities you face, as well as avenues for closer cooperation. We believe this is an important moment for engineering on both sides of the Atlantic and we're here to support your conversations with the Engineering Council.

The three-day visit will include meetings with UK Government Ministers, senior executives from several prominent UK engineering companies, and leaders of the Engineering Council. These engagements will:

- Showcase the UK engineering sector across various disciplines.
- Outline the high standards of engineering education and experience across the United Kingdom.
- Provide an opportunity to learn about the Engineering Council, including their professional review process, continuing professional development, and relationship with discipline specific engineering institutes.
- Promote further cooperation between the UK and US engineering sectors.

In this briefing pack, you'll find logistical information for your itinerary, key contact information, and biographies and briefing notes for your meetings with government and industry. We've also included a brief overview with facts and figures on the UK's engineering sector. Finally, NCEES and the Engineering Council have provided an overview and the latest draft of the proposed mutual recognition agreement for your information.

Thank you again for your attendance on this delegation and willingness to share your perspective on the on the upcoming mutual recognition agreement.

Sincerely,

Gregor Catto
Senior Trade Policy Officer, British Embassy Washington

Accommodation and Information

Hotel	Club Quarters, Trafalgar Square 8 Northumberland Ave London, WC2N 5BY United States +1 (203) 905-2100 UK +44 (0) 20 7451 5800 https://clubquartershotels.com/london/trafalgar-square
Hospital	St. Thomas's Hospital Westminster Bridge Rd Lambeth, London SE1 7EH +44-20-7188-7188
Police	London Metropolitan Police Victoria Embankment Westminster, London SW1A 2JL +44-20-7230-1212
Airport	London Heathrow Airport The Compass Centre Nelson Road, Hounslow TW6 2GW +44 844 335 1801
US Embassy	U.S. Embassy London 33 Nine Elms Lane, London SW11 7US Switchboard +44 (0) 207 499 9000 (24 hours) Marine Post 1 +44 (0) 207 891 3484 (24 hours) Asst. Regional Security Officer: +44 (0) 207 891 3394 (business hours) Duty Officer Cell Phone: +44 (0) 785 079 2472 (24 hours)

UK Government Staff in Attendance

Gregor Catto *Senior Trade Policy Officer, British Embassy Washington*

Gregor oversees the UK Government's state level trade strategy in the US. He also leads work on the mutual recognition of professional qualifications, procurement, and market access. He was previously the agriculture policy advisor and joined the Embassy in 2020. From 2017 to 2020, Gregor served in the Office of US Congressman Robert Aderholt. He led on the several policy areas including appropriations, agriculture, trade, telecommunications and transportation. Before moving to the US, Gregor served as Parliamentary Researcher to John Glen, Member of Parliament for Salisbury. Gregor received his undergraduate degree in Theology from King's College London and studied abroad at UNC Chapel Hill. He can play the bagpipes but couldn't fit them in his luggage for the delegation.

+1 (202) 716-2458| E-mail: Gregor.Catto@fcdo.gov.uk

Grace Lowden *Executive Assistant to US Country Director and Director of Investment, North America, British Embassy Washington*

Grace supports the US Country Director and the Director of Investment within the Department for Business and Trade (DBT) and is based at the British Embassy Washington. Prior to joining the Embassy in June of 2022, Grace worked as a Litigation Paralegal at Sullivan & Cromwell where she specialized in Intellectual Property and Financial Institutions. Grace received her undergraduate degree in International Studies at American University and completed the London School of Economics General Course during her Junior year.

+1 (202) 460-4454 | E-mail: Grace.Lowden@fcdo.gov.uk

Simon Gordon *Team Lead, Department for Business and Trade, North America Bilateral Trade Relations*

Simon Gordon is a team lead in the North America unit of the Bilateral Trade Relations directorate in the UK's Department for Business and Trade. He works on trade engagement with US states, covering areas including recognition of professional qualifications and government procurement. Simon previously worked in the Home Secretary's Implementation Unit at the UK's Home Office.

Before joining the UK Government, Simon served as assistant editor of an online publication in New York City, NY, and subsequently as speechwriter first to an ambassador to the UK and then to a backbench Member of Parliament.

(+44) 7761 876 113 | E-mail: simon.gordon@businessandtrade.gov.uk

Miles Beckwith *Assistant Director at the Department for Business and Trade*

Miles spent his first years out of university working for Saatchi&Saatchi and Mediacom on a range of clients including Toyota, P&G and Tesco. He then began a career in government through the Civil Service Fast Stream. He became a senior policy advisor in DCMS for advertising. He is policy and engagement lead in the Financial, Professional and Business Services team in the Department for Business and Trade. In this role he has worked various trade issues such as driving uptake of the UK's memoranda with US states, mutual recognition of professional qualifications and designing and implementing sanctions on Russia.

(+44) 7733 881 248 | E-mail: miles.beckwith@businessandtrade.gov.uk

Sandra Ababio-Danso *Policy Officer at the Department for Business and Trade*

Sandra is a dedicated professional with a diverse background in project management, policy delivery and stakeholder management. With a strong educational foundation and extensive experience across various sectors, Sandra brings a unique blend of skills and expertise to her professional endeavours. She is currently a HEO policy officer and engagement lead in the Financial, Professional and Business Services team in the Department for Business and Trade.

(+44) 7917 416 300 | E-mail: sandra.ababiodanso@businessandtrade.gov.uk

Delegation Programme

Time	Agenda	Information
Sunday 04 February		
	Delegates depart from the United States	
Monday 05 February		
07:00-10:30	Delegates arrive in London. Transit to **Club Quarters Trafalgar Square Hotel**.	Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY
10:30	Meet Grace in CQ Hotel Lobby for optional walk to **Westminster Abbey**	
10:30-12:30	Optional visit to Westminster Abbey for early delegates – lunch at **Cellarium Café**	Cellarium Café And Terrace, Westminster Abbey, Deans Yard, The Sanctuary, Westminster SW1P 3PA
12:45	Delegates Regroup in Hotel Lobby	Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY
13:00-14:00	Bus from CQ Hotel to **Old Oak Common**	BBVS JV Site Office, GWR Old Oak Common Rail Depot, London NW10 6ED

14:00-15:00	Old Oak Common Super-Hub	
15:00-16:00	Bus back to the hotel	Club Quarters Hotel Trafalgar Square, 8 Northumberland Ave, London WC2N 5BY
16:00-16:30	Freshen Up for Parliament tour & dinner	
16:30-16:45	Walk/ Taxi to **Palace of Westminster**	Cromwell Green Entrance The House Of Commons, London SW1A 0AA
16:45-17:00	Check In/ Security at Cromwell Green Entrance- **The House of Commons**	
17:00-18:00	Tour **Parliament** with Sir Conor Burns' staff – the Prime Minister's Trade Envoy to the United States for Regional Trade and Investment	
18:00-20:00	Welcome dinner hosted by Sir Conor Burns. Also attending: • Paul Bailey, Chief Executive Officer, Engineering Council • Katy Turff, Head of Policy and Standards and Deputy CEO, Engineering Council • Dr Dave Clark, International Affairs Manager, Engineering Council • Hugh Simpson, Chief Executive Officer, Architects Registration Board	Place of Westminster, Terrace Dining Room B

Tuesday 06 February		
7:00-8:00	Breakfast in Hotel	8 Northumberland Avenue, London WC2N 5BY
8:00-8:35	Walk to **Waterloo Train Station**	Waterloo Station York Rd, London SE1 7ND
8:35-8:58	Train to **Woking Station**	Woking Station Approach Woking Surrey GU22 7AE
9:00-9:30	Bus from Woking Station to **McLaren Technology Centre**	Mclaren Technology Centre Chertsey Rd, Woking GU21 4YH
9:30-10:00	McLaren Q&A with Engineers (w/ Refreshments in VIP Area)	
10:00-12:00	Tour of McLaren Technology Centre	
12:00-13:15	Bus to **Battersea Power Station**	26 Circus Road West, Nine Elms SW11 8DD
13:15-14:00	Lunch in **Battersea Arcade Food Hall** with Sam Youdan	
14:00-15:45	Tour Battersea Power Station *15:10 Lift 109 Chimney Tour for 11* *15:20 Lift 109 Chimney Tour for 11*	Two sets of group tickets booked.
15:45-16:00	Bus / Walk to **US Embassy**	33 Nine Elms Lane, London SW11 7US
16:00-17:00	Tour of US Embassy	
17:00-17:30	Drinks at **US Embassy Pub**	

17:30-18:00	Bus to **Club Quarters Hotel**	8 Northumberland Avenue, London WC2N 5BY
18:00-18:15	Freshen Up at Hotel	8 Northumberland Avenue, London WC2N 5BY
18:15-18:30	Walk/ Taxi to Dinner	Institution of Civil Engineers One Great George Street, London
18:30-20:00	Dinner with UK engineering industry, hosted at the **Institution of Civil Engineers**	One Great George Street, London
Wednesday 07 February		
08:30-09:30	Breakfast in Hotel	8 Northumberland Avenue, London WC2N 5BY
09:30-09:40	Walk to **Department for Business and Trade**	Old Admiralty Building Admiralty Place London SW1A 2DY United Kingdom
10:00-10:25	Meeting with Rt Hon Greg Hands MP, Minister for Trade Policy	Churchill Room, Department for Business and Trade
10:25-11:00	Walk to **Foreign, Commonwealth and Development Office**	King Charles Street London SW1A 2AH United Kingdom
11:00-11:10	Welcome remarks from David Rutley MP, Minister for the Americas, Caribbean and Overseas Territories.	

11:10-1300	Roundtable discussions between Engineering Council and National Council of Examiners for Engineering and Surveying	
13:00-13:30	Lunch	Room K1.33
13:30-14:00	Tour of FCDO	FCDO Fine Rooms
1400-16:00	Continued Roundtable at FCDO	Room K1.33
19:00-20:30	Internal Delegation Dinner at **Browns Covent Garden**	Browns Covent Garden 82-84 St. Martins Lane, Covent Garden, London, WC2N 4AG
Thursday 08 February		
	Delegates fly back to the United States	

Mutual Recognition Agreement between the National Council of Examiners for Engineering and Surveying (USA) and the Engineering Council (UK).

Background

Over the past few years, there has been increasing interest from the government, employers and professional associations in exploring the possibility of recognition of professional qualifications between the UK and the USA. This intention was announced in the UK Prime Minister's opening remarks in the Atlantic Declaration at the White House on Thursday 8 June 2023: *"An agreement to work towards mutual recognition of more professional qualifications in areas like engineering…"*

The Parties

The National Council of Examiners for Engineering and Surveying (NCEES) is a not-for-profit organisation with a mission to advance licensure for engineers and surveyors in order to safeguard the health, safety, and welfare of the public. NCEES members are the engineering and surveying licensure boards from all 50 U.S. states, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico and the U.S. Virgin Islands.

The Engineering Council (EngC) was incorporated by Royal Charter in 1981 to regulate the engineering profession in the UK and sets and maintains internationally recognised standards of professional competence and commitment for the public benefit. EngC holds the national register of over 228,000 engineers and technicians who have been assessed against these standards and awarded a professional title, for example Chartered Engineer.

Both organisations are founding members of the International Engineering Alliance (IEA) International Professional Engineers Agreement (IPEA).

Objectives and Principles

The intent of the agreement is to enable mobility for Chartered Engineers (UK) and Professional

Engineers (USA), reducing bureaucracy, duplication of assessment and costs where possible. Enabling mutual recognition provides increased opportunities for individuals and businesses for trade, knowledge sharing and co-operation. It will also enable skills shortages in critical areas to be addressed.

A leading global consulting firm with operations in the USA and the UK has stated recently:

'*There are many advantages to breaking down mutual recognition barriers. A key sectoral one we would immediately identify is the benefit of sharing skills and experience as both countries develop their green economies, where experienced engineers are in high demand to lead and work on decarbonisation and renewable energy projects.'*

The MRA is designed to ensure that the public, employers and their clients can have confidence and trust that registered/licensed engineers participating in the agreement have met globally recognised professional standards. It also respects discipline-specific and jurisdictional requirements of the US and UK participating organisations.

The Agreement

NCEES and EngC have exchanged information on standards and processes for the licensure and registration of professional engineers in each jurisdiction and developed an agreement to facilitate mutual recognition.
Despite differing systems of regulation, due diligence has confirmed that the UK and USA are well-aligned in terms of professional standards for registered/licensed engineers at the Chartered/Professional Engineer level. This is further assured by regular independent peer-review by the IPEA, confirming that the standard of professional competence in each jurisdiction is substantially equivalent to the globally recognised IPEA benchmark.

As a comparable benchmark of professional competence has been established, this allows significant exemptions from standard assessment processes to be considered. To facilitate this, it has been agreed that individual applicants should already have been awarded the IPEA's International Professional Engineer (IntPE) title in their home jurisdiction, providing further assurance of current professional competence and continuing professional development (CPD).

There is an opt-in mechanism so that the Licensing Boards of US States can participate, based on the model of 2023 agreement between the Architects Registration Board (ARB) and its US counterpart, the National Council of Architects Registration Boards (NCARB). The agreement also includes a regular review mechanism to optimise and safeguard the operation of the MRA across the UK and US States. Licensed Members of the Engineering Council, the UK Professional Engineering Institutions (PEIs), will also be participants in the agreement.

The Next Steps

Following final approval by NCEES and EngC governance, it is intended that the two parties will sign the agreement in the spring. This will be followed by a full launch, with opted-in state boards, at the NCEES National Meeting in August 2024.

David Cox

CEO NCEES

Paul Bailey

CEO Engineering Council

UK Engineering Background

- Engineering is a key sector for the UK and makes a significant contribution both socially and economically.

- The UK is a global powerhouse in engineering, boasting a rich history of innovation and a diverse array of engineering professions that contribute significantly to the nation's economic prosperity and technological advancement.

- The UK is renowned for its world-class civil engineering projects, including iconic structures like the Channel Tunnel, Crossrail, and the Thames Barrier. These services are also exported all over the world. For example two UK companies, Arup and Foster and Partners, are combining to design the Merced, Fresno, Kings/Tulare, and Bakersfield stations on the initial 171-mile segment of the California High-Speed Rail.

- The UK is a hub for precision engineering, with expertise in aerospace (Rolls Royce, BAE systems), automotive (Aston Martin, Jaguar Land Rover, MacLaren), and manufacturing industries (INEOS, GlaxoSmithKline).

- The UK is at the forefront of biomedical engineering, with leading research institutions and companies driving innovation in healthcare technologies.

- This is success is underpinned the flow of talent from the UK's top universities, such as Oxford, Cambridge and Imperial College London, and a large network of apprenticeships, now supported by a £50m government programme specifically for fostering the next generation of engineering talent.

Fig 1. Key economic metrics

GVA	£20.4bn
Annual growth 2021-22	9.90%
Employment	541,000
Registered businesses	85,500
Exports	£8.5bn
Imports	£4.5bn

- The subsector is fairly concentrated in large firms (250+ employees) which make up 0.4% of all employers, but provide 30% of employment and 38% of turnover in the subsector. Major firms include Atkins, Aecom, ARUP and Mott MacDonald.
- Engineering is growing at a much faster rate (9.9% growth in GVA per year) than the rest of the economy (4.3% growth in GVA per year.) Jobs have also outstripped the UK average, rising 3.9% in 2021-22 compared to the 2.7% UK average, reflecting the dynamism of the sector.
- The engineering profession is more regionally diverse than other services professions. (see Fig. 2.) 80% of engineering GVA is generated outside of London, compared to 65% for the rest of the professional and business services economy. This reflects the UK's considerable investment and expertise in renewable energy, such as solar and wind farms, as well as advanced manufacturing at regional sites.

Top 5 regions (2021 GVA, % of UK)

London	£4.1bn, 20%
South East	£3.7bn, 18%
East of England	£2.8bn, 14%
Scotland	£2.1bn, 10%
North West	£1.9bn, 9%

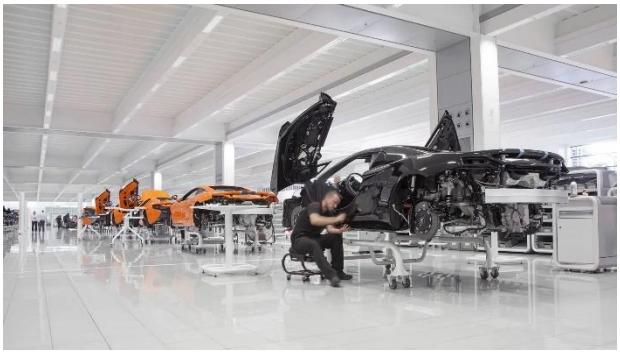
Site Visits

Old Oak Common

Old Oak Common is a new super-hub set to be the best-connected and largest new railway station ever built in the UK. The station will have fourteen platforms, a mix of six high-speed and eight conventional service platforms, with an 850m-long station box, big enough to fit 6,300 Routemaster buses inside.

Old Oak Common will become one of the country's most vital transport super-hubs. The station is expected to be one of the busiest railway stations in the country with high-speed rail services across the UK, and access to central London and Heathrow via the Elizabeth line. Passengers will also be able to travel to Wales and the South West. Its construction and operation will also drive the regeneration of the area around it in West London.

McLaren Technology Centre



McLaren is one of the most successful teams in the history of Formula One. Founded in 1963 by Bruce McLaren, the team have won 183 grand prix and 20 World Championships. Their cars have been piloted by the greatest drivers in the sport's history including James Hunt, Ayrton Senna, Alain Prost, Nikki Lauda, Fernando Alonso, and Lewis Hamilton.

The McLaren group now runs racing teams in Formula One, Indy Car, Formula E, and Extreme E. The McLaren Technology Centre also houses McLaren Automotive, production facility for some the most advanced road cars in the world. McLaren's mission is to create breathtaking performance road cars that deliver the most thrilling driving experiences imaginable. Utilizing their racing expertise they aim to pioneer new technology which breaks industry norms and asks: 'how can we do it better?'

Battersea Power Station

Starting operation in the 1930s, Battersea Power Station was a critical power supply for the capital. At its peak, Battersea Power Station was supplying a fifth of London's electricity, including to landmarks such as the Houses of Parliament and Buckingham Palace. It was closed in 1983 but the iconic structure on the Southbank was Grade II listed by Historic England.

In 2012, the 42-acre site was purchased with plans drawn to restore and renovate the structure. Opened again to the public in October 2022, Battersea Power Station now contains homes, shops, cafes, restaurants, cultural venues and open space for London.

UK Government Meetings

Rt Hon Sir Conor Burns MP - Trade Envoy to the United States for Regional Trade and Investment

The Rt. Hon. Sir Conor Burns MP was appointed the Prime Minister's Trade Envoy to the United States for Regional Trade and Investment. Previously he was Minister of State for Northern Ireland. He was also Minister of State for Trade Policy between July 2019 and May 2020. Elected to the House of Commons in 2010 he has held a number of Parliamentary Private Secretary positions in the Northern Ireland Office (2010-12), Treasury and BEIS. He served as PPS to the Rt. Hon. Boris Johnson as Foreign Secretary between 2017-18.

Conor was born in Belfast in 1972 and went to Park Lodge Primary School on the Antrim Road before his family moved to Hertfordshire. He read Modern and Politics at the University of Southampton where he later served on the City Council. Prior to his election to Parliament he had a career in Financial Services and Communications.

Rt Hon Greg Hands MP - Minister of State for Trade Policy

Greg Hands was appointed Minister of State for Trade Policy in the Department for Business and Trade on 13 November 2023. He was also appointed Minister for London on 13 November 2023. He was previously Minister without Portfolio at the Cabinet Office, Minister of State at the Department for International Trade and a Minister of State at the Department for Business, Energy & Industrial Strategy. He was elected the Conservative MP for Hammersmith and Fulham in 2005, and for Chelsea and Fulham in 2010.

Greg was educated at a variety of state schools in the UK and the USA, but principally at Dr Challoner's Grammar School, Amersham, before going on to study Modern History at Cambridge University, with time spent in the modern languages and oriental studies faculties graduating with first class honours. Greg spent 8 years working on trading floors in London and New York trading and marketing fixed income derivatives.

David Rutley MP – Minister for the Americas

David Rutley was appointed as a Parliamentary Under Secretary of State at the Foreign, Commonwealth & Development Office on 27 October 2022. He was previously Parliamentary Under Secretary of State (Minister for Welfare Delivery) at the Department for Work and Pensions. He was a Government Whip from 15 June 2017 to 16 September 2021. He previously served as Parliamentary Under Secretary of State at the Department for the Environment, Food and Rural Affairs from 3 September 2018 to 27 July 2019.

David received a BSc (Econ) from the London School of Economics and a MBA from Harvard Business School. David was first elected to Parliament in the 2010 General Election as the Conservative MP for Macclesfield. He has previously served on the Treasury Select Committee and as Parliamentary Private Secretary to several Secretaries of State.

David spent most of his career in business and worked as a senior executive in major companies, including Asda, PepsiCo International, Halifax General Insurance and Barclays. From 1994 to 1996 he worked as a Special Adviser at the Treasury, the Cabinet Office and the Ministry of Agriculture.

Engineering Council Biographies

John Chudley
Engineering Council Chair

John has held various positions in academia, including Provost of Warsash Maritime Academy, Executive Dean of the Marine and Technology Faculty at Southampton Solent University and Head of the Institute of Marine Studies and Mechanical and Marine Engineering Departments at the University of Plymouth. He remains a Visiting Professor to both Plymouth and Solent, and he honed his skills as a Mechanical Engineer apprentice before progressing to higher education, completing a PhD in Marine Technology.

John has also been employed with the Civil Service, positions include being a Director of the Learning and Skills Council and the National Apprenticeship Service. John has also acted as a Director and Board Member to a number of companies and organisations. At present he is a Council Member of the Royal National Lifeboat Institution and a Board Member and Chair of the Engineering Council.

Paul Bailey
Chief Executive Officer

Paul is Chief Executive Officer at the Engineering Council, the UK regulatory body for the engineering profession. Prior to his appointment as CEO, Paul held the position of Deputy CEO & Operations Director for over eight years and was also previously Deputy CEO at the Royal Aeronautical Society. With a degree in Physics and a background in aerospace and aviation, Paul is a member of both the Institute of Physics and the Royal Aeronautical Society.

Katy Turff

Head of Policy & Standards and Deputy CEO

Katy joined the Engineering Council in 2011 as Head of International, with over twenty years' experience working for professional engineering institutions. In 2016 she led the newly formed Professional Standards department which brought together the international and standards teams, embedding a focus on international alignment and recognition into core business.

As Head of Policy & Standards and Deputy CEO, Katy continues to have strategic oversight of the Engineering Council's international recognition and standards work. This includes development of a contextualised version of UK-SPEC for engineers and technicians working on higher-risk buildings. Her brief also covers the strategic themes of engineering & society, and diversity and inclusion in the profession. Katy is Chair of the International Engineering Technologists Agreement and a member of the Governing Group of the International Engineering Alliance.

Dr David Clark

International Affairs Manager

Dave has extensive experience in not-for-profit, professional body and corporate sectors. Since 2016, he has been International Affairs Manager at The Engineering Council, managing the work of securing and maintaining the international comparability of the UK registration standards.

Previously Dave was Head of International Development at the Royal Society of Chemistry, developing and managing partnerships to support UK scientists through international collaborative programmes.

Dave has also worked for 19 years in industry, with the US analytical instrument company PerkinElmer Inc in a variety of scientific and technical roles. He has a PhD in Physical Organic Chemistry from King's College, London and was elected a Fellow of the Royal Society of Chemistry in 2008.

ICE Dinner Biographies

Séan Harris OBE

Deputy Director General and Director membership, Institution of Civil Engineers (ICE)

Séan was appointed director of membership in August 2015 and has been an engineer for over 30 years. Séan is responsible for overseeing the creation and delivery the membership proposition. This includes programmes to inspire students to study and practice civil engineering, the accreditation of civil engineering degrees, the Initial Professional Development of graduates, Professional Reviews for the technician, incorporated and chartered qualification, and Continuing Professional Development and delivery of lifelong learning.

Stephen Marcos Jones

Group CEO, The Association for Consultancy and Engineering (ACE)

Stephen led significant change across this sector, spearheading a cross-industry response on issues such as environmental regulation and promoting the sector's opportunity to deliver decarbonisation in pursuit of Net Zero, while helping to articulate a vision for a sustainable future for the sector.

Prior to his appointment, he held a number of senior leadership positions at OGUK, the representative body for the UK offshore energy industry, where he grew commercial revenues for the association through a robust member engagement and events programme. He also led a campaign to drive efficiency into the industry, through the optimisation of procurement practices across the entire supply chain.

Sarah Prichard

Managing Director UK Buildings, Hong Kong & China, Buro Happold

Sarah is one of the practice's leaders in the field of building vibrations and dynamics, and consults widely in this area, particularly on mixed use, transport stations, sports structures, hospitals and laboratories projects.

During her time at Buro Happold, Sarah has developed a passion for the delivery of multidisciplinary projects across several sectors, ensuring a high quality of delivery and client satisfaction either as the project leader or director.

Sarah spent three years in Qatar leading the supervision of the engineering works on Phase 2 and Phase 3 of the Msheireb Downtown Doha Project, formerly known as the Heart of Doha. This project intends to entirely recreate the centre of Doha in a sustainable and sympathetic way for the 21st century.

Sam Youdan

Director, Buro Happold

Sam has a Master of Engineering degree from the University of Cambridge and is a Fellow of the Institution of Civil Engineers.

His work focuses on redevelopment projects in central London, for example, Battersea Power Station, Marcol House and the ME Hotel, making him an expert in refurbishment projects. A key member of the Battersea Power Station team, he helped deliver the engineering for the repurposing and refurbishment of this iconic Grade II listed project.

Sam led the heritage and heavy refurbishment design and site works, including the successful dismantling and re-construction of the award-winning chimneys**.**

Mike McNicholas

MD of Infrastructure UK & Europe, Atkins Realis

Mike was the engineering Project Director for the London 2012 Olympic and Paralympic games.

Atkins is one of the world's most respected design, engineering and project management consultancies, employing over 18,300 people across the UK, North America, Middle East and Africa, Asia Pacific and Europe.

Dr Simon Harrison

Group Head of Strategy, Mott MacDonald

Dr Simon Harrison is a leading voice in public policy around engineering's implications in energy transition and decarbonisation. He also holds senior positions in Mott MacDonald, developing its global strategy and developing its scope and expertise in both domestic and international markets.

He has made major contributions to UK energy policy and has chaired important national committees and professional groups advising government on this area of great strategic importance, often providing important input to Academy outputs.

He has served two terms as Vice President of the Institution of Engineering and Technology, with contributions in strategy, membership, professional development, and knowledge solutions.

David Riches

Deputy Director Financial, Professional and Business Services, Department for Business and Trade

David has operated as a senior leader with one of the UK's leading Trade Associations, as a CEO of a regional trade & investment promotion organisation and a Trustee with a national charity.

Executive Director, British Chambers of Commerce Chief Executive, East of England International Director, North America, Think London (now part of London & Partners) Director, Strategy & Corporate Development, Cable & Wireless Senior Consultant, EY Strategic Advisory Services

Delegate Biographies

Laura Sievers, P.E.

President, National Council of Examiners for Engineering and Surveying (NCEES)

A resident of LeMars, Iowa, Sievers has served as a member of the Iowa Engineering and Land Surveying Examining Board since 2016. She served as chair of the NCEES Committee on Examinations for Professional Engineers in 2021–22 and as chair of the Committee on Examination Audits in 2017–19. She served as board liaison to the Committee on Examinations for Professional Engineers and the Special Committee on Bylaws in 2022–23.

David Cox

CEO, National Council of Examiners for Engineering and Surveying (NCEES)

Cox previously served as executive director of the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors from 2001 to 2018. During this time, he was also active in the work of NCEES. He served 10 terms on the organization's Committee on Finances, including two as chair. He also served as a member of the Committee on Member Board Administrators, the Advisory Committee on Council Activities, the Governance Task Force, and the Licensure Qualifications Oversight Group. In 2014, NCEES awarded him the Meritorious Service Award in recognition of his contributions to the organization and the professions of engineering and surveying.

Cox holds a Bachelor of Science degree in accounting from the University of Kentucky and is licensed as a certified public accountant in Kentucky.

Rossana D'Antonio, P.E.

Board Member, California Board of Professional Engineers, Land Surveyors, and Geologists

Rossana D'Antonio serves as Deputy Director for Los Angeles County Public Works. She provides executive leadership for the development of sustainable communities, resilient housing, private sector commercial marketplaces and jobs, and emergency management.

A 30-year Department veteran, Rossana has extensive background in many disciplines of engineering, management, operations and business processes. She received her Bachelor of Science Degree in Civil Engineering from Fresno State and an MBA with emphasis in leadership and organizational development from Pepperdine University. In 2020, Rossana was appointed by Governor Gavin Newsom to the California Board of Professional Engineers, Land Surveyors, and Geologists where she currently works to ensure protection of the public and the environment with competent and ethical professional services. Currently, she serves on the ASCE Board of Direction and the Government Engineers Council.

David Jackson

Executive Director, Maine State Board of Licensure for Professional Engineers

David Jackson has served as the Executive Director of the Maine State Board of Licensure for Professional Engineers since 2012. He sat on the board as the public member from 2008 to 2010. Jackson is an attorney licensed in Maine and Massachusetts. He previously served as an Assistant District Attorney in Kennebec and Somerset Counties in Maine, and while in private practice focused on criminal defence and litigation. He received his B.A. in English from Brigham Young University and his J.D. from the Massachusetts School of Law.

Jim Kelly, P.E.

Professional Engineers Board Chair, Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA)

A resident of Williamsburg, Virginia, Kelly has served as a member of the Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers, and Landscape Architects since 2017. He has also served as chair of the Virginia board. Kelly has served as a member of the NCEES Southern Zone Site Selection Committee.

Kelly graduated from the United States Merchant Marine Academy with a bachelor's degree in marine engineering systems and from the Florida Institute of Technology with a master's degree in engineering management. As a licensed professional engineer, he has worked as the manager of crane engineering and quality at Newport News Shipbuilding.

Dr Lance Kinney, P.E.

Executive Director, Texas Board of Professional Engineers and Land Surveyors (Austin, TX)

Kinney has served the board in several positions for more than seven years, providing guidance to agency programs and activities, including legislative, rule and policy issues.

Before joining the Board of Professional Engineers, Kinney worked nearly a dozen years in the semiconductor industry. He holds a bachelor's degree from The University of Texas at Austin, a master's from Texas State University and is currently a doctoral student at The University of Texas. He has lectured as an adjunct professor in the Engineering and Technology Department at Texas State and the Electronics and Advanced Technologies Department at Austin Community College.

Patty Mamola, P.E.

Executive Director, Nevada Board of Engineers and Land Surveyors

Patty Mamola served as the first female president of the National Council of Examiners for Engineering and Surveying, also known as NCEES. Mamola has been a member of the Nevada State Board of Engineers and Land Surveyors since 2006. A resident of Reno, Nevada, and licensed as a professional engineer in Nevada since 1993, Mamola has focused her career on transportation, construction management, and analytical problem solving. She is one of the founding principals of the professional engineering firm Bowling Mamola Group.

Mamola is a graduate of South Dakota School of Mines and Technology, where she earned a bachelor's degree in civil engineering. She is an active member of the American Public Works Association, the National Society of Professional Engineers, and the Women's Transportation Seminar.

Darren Mickler

Executive Director, Georgia Professional Engineers and Land Surveyors Board

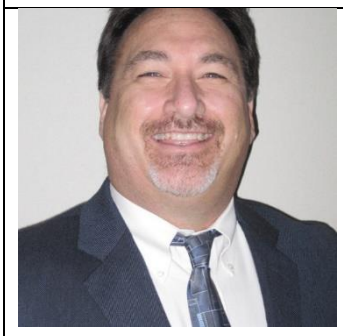
Darren Mickler is the Executive Director of the newly created Georgia Professional Engineers and Land Surveyors Board. Prior to accepting the position with the newly created Board, Mr. Mickler served as Executive Director for the Georgia Board of Registration for Professional Engineers and Land Surveyors and many other professional licensing Boards under the umbrella agency of the Georgia Secretary of State's Office for 21 years.

Mr. Mickler was a Plant Manager for YKK(USA)INC in the PPD plant producing textured yarn for zipper tape. Prior to that, he was the Technical Engineer for the production of polyethylene terephthalate (PET) for the plastic zipper and zipper tape making processes. This was one of the last batch process polymerization plants in the United States. Mr. Mickler holds an ABA from Middle Georgia College and a BBA in Management from Georgia College and State University.

Judi Miller

Consumer Member, Maryland PE Board, Registered Architect

The professional career of Judith A. Miller, AIA, CDT, Principal and founder, encompasses over twenty-five years of experience in Architecture and Engineering for a wide array of residential and light commercial projects. Her extensive experience in the field of multifamily and senior housing, gives her an advantage in finding the most appropriate solution to these types of projects. Prior to founding ABD, Ms. Miller was a Senior Associate at Design Collective Inc. where she managed the residential studio for 10 years. She is currently a registered Architect in Maryland, Delaware, Virginia and the District of Columbia.

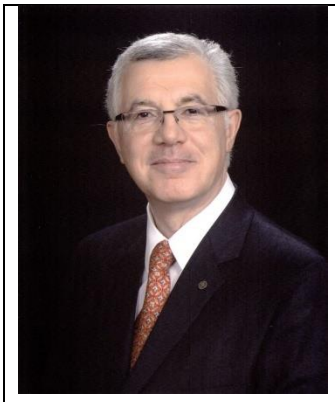


Ric Moore, P.L.S.

Executive Officer, California State Board of Technical Registration

Moore is a Professional Land Surveyor with more than 30 years of project management and land surveying experience. He has specific expertise in boundary, A.L.T.A. and topographic surveying, utility mapping, right-of-way, public works, commercial, residential, and construction staking projects. He has also been responsible for managing Geographic Information System (GIS) implementations for several public agencies throughout Southern California. Currently serving as the Executive Officer for the Board for Professional Engineers, Land Surveyors, and Geologists (BPELSG), appointed in June 2011, and previously serving as the Senior Land Surveyor Registrar for the Board from 2007-2011.

He served four terms as the Western Zone Secretary for National Council of Examiners for Engineers and Surveyors (NCEES) from 2013-2021 and was a former member of the California Land Surveyors Association (CLSA) from 2002-2012.

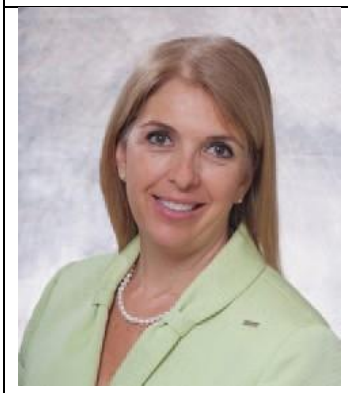


Dr Sina Nejad, P.E.

Chair, Texas Board of Professional Engineers & Land Surveyors

Sina Nejad of Beaumont, Texas, is founder and president of Sigma Engineers, Inc. He received both his bachelor and master degrees in Engineering from Lamar University. He is a structural engineer licensed to practice engineering in Texas and Province of Alberta, Canada, and an excepted engineer approved to engage in the practice of architecture in Texas.

Nejad's community involvement includes serving as the chairman of both Planning and Zoning Commission and the Building Code Board of Adjustment & Appeals for the City of Beaumont, member of the Lamar University Civil Engineering Advisory Council, member of the Lamar University Foundation Board of Directors, and the Christus St. Elizabeth Hospital Advisory Board. He is a member and the past president of the symphony of Southeast Texas, past president and member of the Anayat House, member of the Beaumont Chamber of Commerce, and named Small Businessperson of the Year 2004 by the Beaumont Chamber of Commerce.



Kate Nosbisch

Executive Director, Virgina Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects (APELSCIDLA)

Nosbisch has been executive director for the Virginia Board of Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects since 2008. Previously, she was deputy executive director for the Virginia Board of Medicine. She holds a bachelor’s degree in business/communications and a master’s degree in professional leadership from Carlow University.

Zana Raybon

Executive Director, Florida Board of Professional Engineers

Zana Raybon has served as the Executive Director of the Florida Board of Professional Engineers for the past 15 years. She has a B.S. in Political Science from Florida State University and a A.S. in Legal Studies from Tallahassee Community College.

Andrew Ritter

Executive Director, North Carolina Board of Examiners for Engineers and Surveyors

Andrew Ritter has been with the North Carolina Board of Examiners since 1993 and has been the Executive Director since 2001. He has also been an investigator for the Board and the Supervisor of Investigations.
He is currently serving as the Finance Committee Chair for the National Council for Engineering and Surveying (NCEES).

He has served as a guest lecturer on ethics and license promotion at NCSU, Duke, Campbell and UNC – Charlotte and served on engineering program advisory boards for North Carolina A&T and UNC-Wilmington.
He was selected to proctor the first exams given in Saudi Arabia and Taiwan and assisted in developing licensure models for several foreign countries including Japan, the United Arab Emirates and the Commonwealth of the Bahamas

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Scott Sayles, P.E.

Board Vice Chairman, Arizona State Board of Technical Registration

Scott Sayles is an experienced Professional Civil Engineer with over 23 years of experience with a passion for design, construction, and problem solving. Hailing from Kingman, Arizona, he later studied at the University of Arizona where he earned a Bachelor of Science in Civil Engineering. Scott has contributed significantly to the field of engineering through his work for WSP and Parsons on complex engineering projects in the United States, as well as internationally.

He is the Vice Chairman of the board on the Arizona Board of Technical Registration where he also serves as the Civil Engineering Board Member. Scott is deeply engaged in volunteer work, driven by a desire to provide others with enhanced engineering opportunities. In his leisure time, he finds joy in disc golf and actively participates in volunteering with his sons' scouting troop. He has been happily married to his high school sweetheart, a chemical engineer, for 23 years. Together, they are proud parents of two sons.

Judith Stapley

Executive Director, Arizona State Board of Technical Registration

Judith Stapley has worked in State Government for the past nine years. She accepted the position of Executive Director at the Arizona State Board of Technical Registration in May of 2021. Her education includes an Undergraduate Degree in Public Administration and a Master's Degree in Public Safety Administration and Emergency Management, specializing in mass fatality incident response. In her current position, she actively participates in administrative rulemaking, administrative law, policy implementation, and navigating the political environment surrounding public organizations, specifically regulatory boards. She is active in several state and national organizations and serves on the Interorganizational Council on Regulation (ICOR).

Josh Twitty

Advocacy and External Engagement Strategist, National Council of Examiners for Engineering and Surveying (NCEES)

Within his role, Twitty addresses threats against licensure by supporting state engineering and land surveying boards in their legislative efforts. He facilitates NCEES's advocacy agenda by analysing legislation, coordinating ARPL efforts with partner organizations, and guiding internal and external communication efforts to raise public awareness of responsible licensure. Prior to joining NCEES, Josh worked for the Arkansas Bureau of Legislative Research as a Legislative Analyst. In this role, he tracked bills during session, conducted bill presentations for committees, and drafted bills for committee legislative members.

Josh earned his Bachelor of Arts in Criminal Justice and Legal Studies from the University of Arkansas at Little Rock and a Master of Public Affairs from the University of Missouri. Josh is also an Air Force Veteran.

Jon Wilbeck

Executive Director, Nebraska Board of Engineers and Architects

Jon Wilbeck is the Executive Director of the Nebraska Board of Engineers and Architects. He has been with the Board for 14 years, the first two years as the board's Compliance Officer. Prior to joining the Nebraska Board, Jon worked at architectural firms in Lincoln, Nebraska and Seattle, Washington in project administration and business development. A native of Minden, Nebraska, Jon is also an eight-year veteran of the U.S. Navy. Jon has also served on NCEES' Member Board Administrator and Uniform Procedures and Legislative Guidelines committees.

Notes

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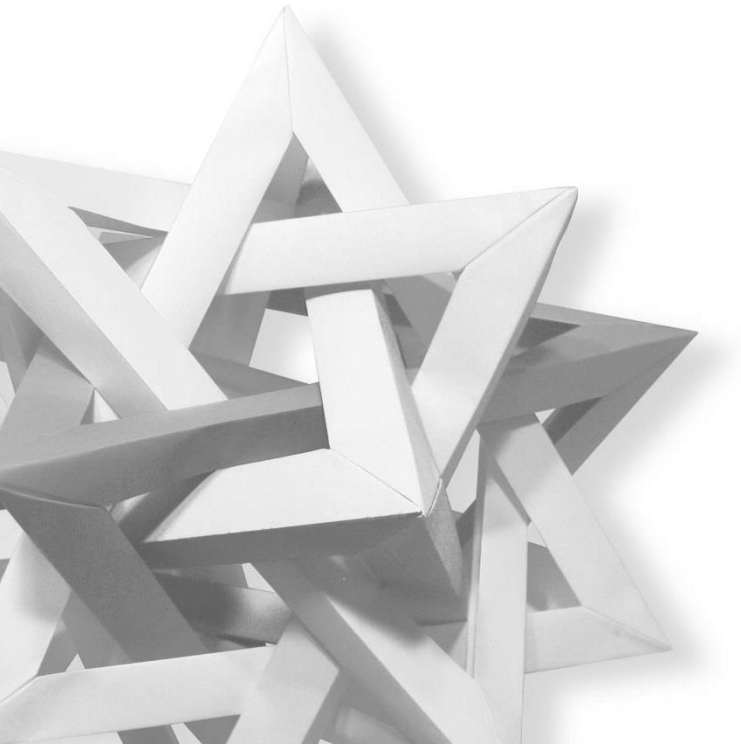
Engineering Council

APPENDIX D

Engineering Council Introduction



Dr Dave Clark – International Affairs Manager, EngC

7 February 2023

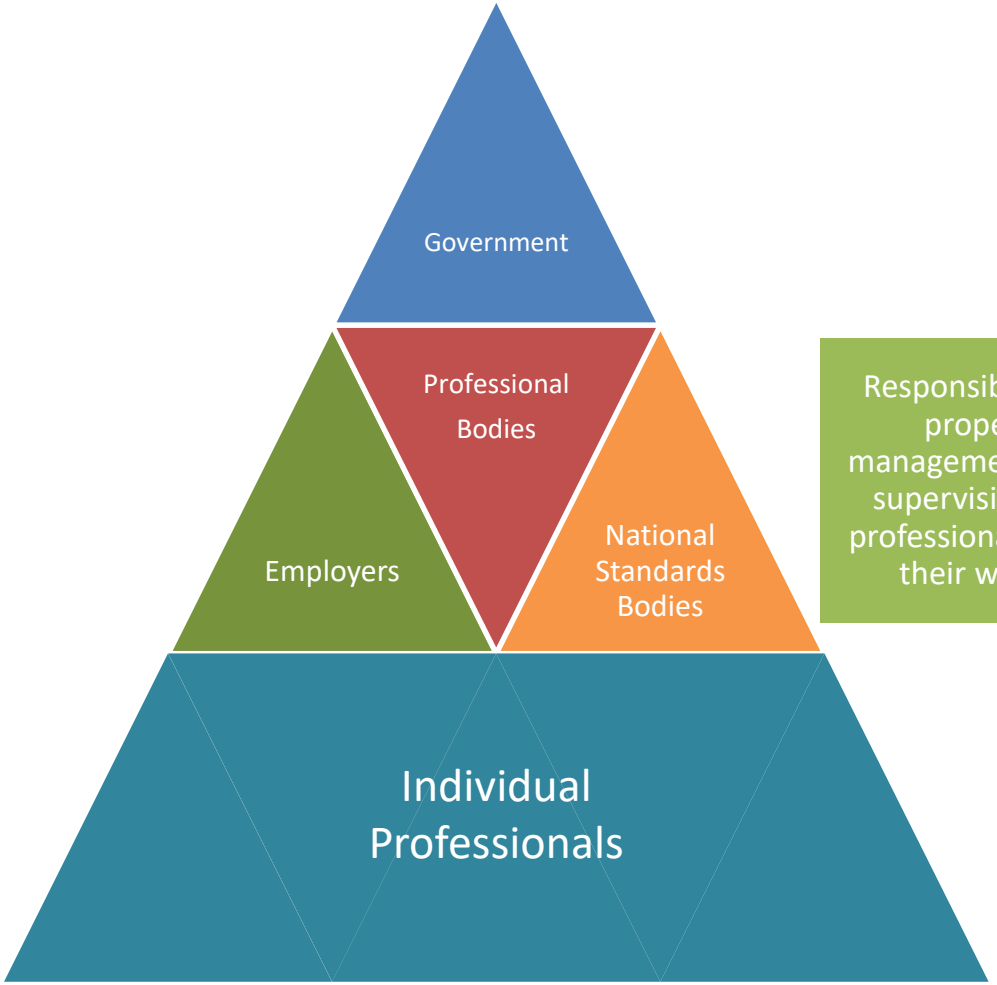
About the Engineering Council

- UK regulatory body for the engineering profession, operating under a Royal Charter since 1964
- Self-regulation via a formal agreement with the Government via the Privy Council, for the benefit of society
- Sets and maintains standards of professional competence, and for degree qualifications and apprenticeships demonstrating underpinning knowledge, understanding and skills.
- Holds the UK register of professional engineers (legally protected titles):
  - Chartered Engineers (CEng)
  - Incorporated Engineers (IEng)
  - Engineering Technicians (EngTech)
- Licenses 39 Professional Engineering Institutions
- Associated with 18 Professional Affiliates
- Over 230,000 registrants worldwide
  - 19.6% professionally registered engineers are overseas

Engineering Council

Context: the UK Regulatory framework

Professional Regulation exists to protect consumers and society at large. In the UK it is part of a spectrum of regulatory mechanisms.



Legislates for the public interest

Responsible for proper management and supervision of professionals and their work

Set standards of competence and professional conduct, set examinations award titles, keep registers

Sets product standards and standards of practice

Take personal responsibility for their own performance, maintaining their competence and high standards of professional conduct.

Engineering Council

Reserved areas of work

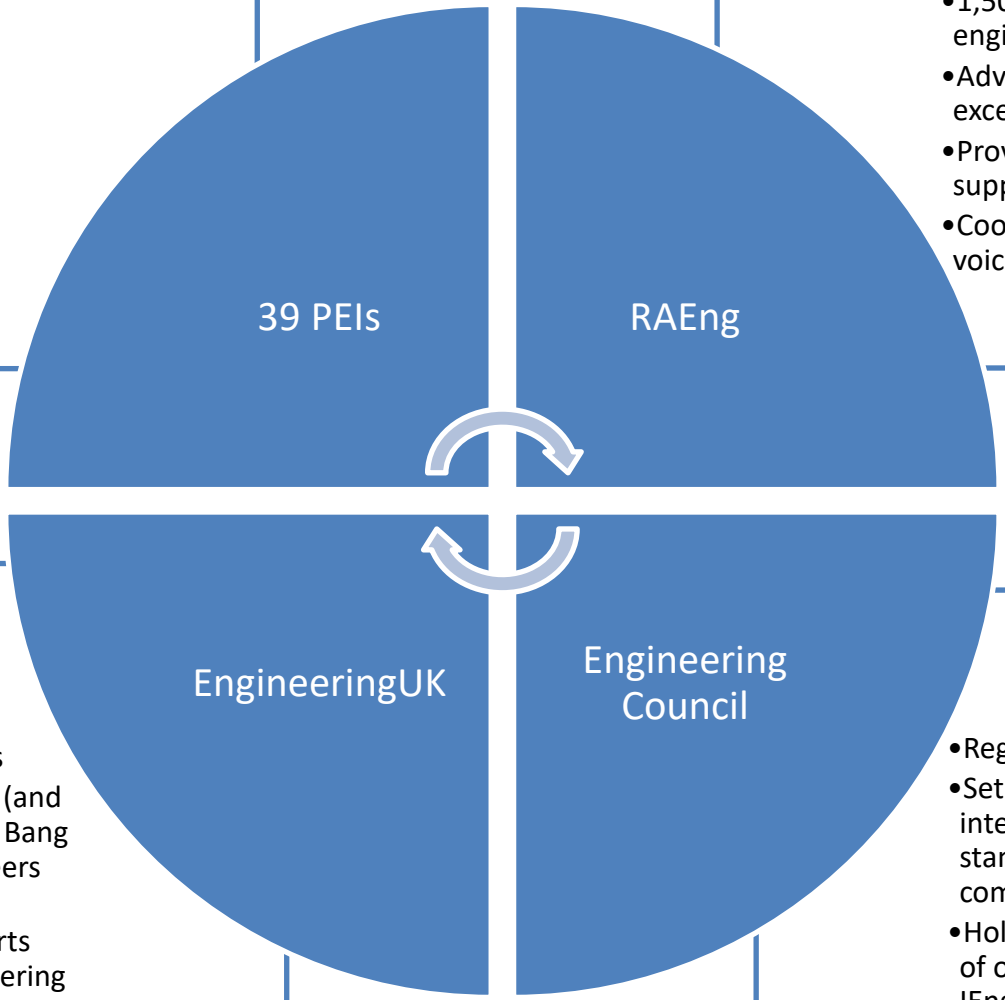
- Reserved areas of work – by statute, regulation or industry standards to licensed or otherwise approved persons

- Aircraft Maintenance (**EASA** Part 66, Annex III to European Commission Regulation **2042/2003**)
- Electrical Safety in Buildings (**Building Regulations Part P**)
- Gas Fitting (**Gas Safety (Installation & Use) Regulations 1998**, **Gas Safe Register**)
- Non-destructive Testing (**ISO 9712: 2012** Non-destructive testing – Qualification and certification of NDT; **Personnel Certification in Non-destructive testing PCN**)
- Pressure Vessel Design (**The Simple Pressure Vessel (Safety) Regulations 1991**)
- Quarry Management (**The Quarries Regulations 1999**, Health & Safety Executive)
- Railway Signalling (**IRSE Licensing Scheme**)
- Reservoir Design and Inspection (**Reservoirs Act 1975**, Environment Agency)
- Ships Officers (The Fishing Vessels **(Certification of Deck Officers and Engineer Officers) (Amendment) Regulations 1998**, **Maritime and Coastguard Agency**)
- Vehicle Maintenance (**DVSA** Authorised Examiner)
- Inspection and Maintenance of Highways Structures (**The Highways Agency Design Manual for Roads and Bridges** Volume 3 Highway Structures: Inspection and Maintenance)
- Structural Engineers Register Scotland (The Building (Scotland) Act 2003 **Structural Engineers Register**)
- **Care of Cathedrals Measure 2011**
- **Road Tunnel Safety Regulations 2007**
- **Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015**
- Higher-Risk Buildings (**Building Safety Act 2022**)

Engineering Council

Our partners at the heart of the engineering profession

- 500,000 members
- Promote and advance specific engineering discipline
- Assess for professional registration
- Accredit educational programmes
- Maintain professional standards (CPD)
- Provide policy advice



- 1,500 Fellows across all engineering sectors
- Advances and promotes excellence in engineering
- Provides analysis and policy support to Government
- Coordinates a unified policy voice for engineering

- Promotes engineering and engineering careers
- Focuses on the learner (and influencers) via The Big Bang and Tomorrow's Engineers
- Periodically produces statistically-based reports into the state of engineering in the UK
- Coordinates a unified voice for engineering to the public

- Regulatory body
- Sets and maintains internationally recognised standards of professional competence and ethics
- Holds the national registers of over 229,000 EngTech, IEng, CEng and ICT*Tech*

Engineering Council

UK Professional Engineering Institutions

Engineering Council

International accords and agreements

- Founding signatory of the IEA Washington, Sydney and Dublin Accords
- Founding member of the International Professional Engineers Agreement (IPEA), International Engineering Technologists Agreement (IETA) and Agreement for International Engineering Technicians (AIET)
- UK National Member of FEANI (over 16,000 EUR ING)
- Member of ENAEE – awarding EUR-ACE recognition
- Member of ENGINET
- Bilateral Mutual Recognition Agreements – OE (Portugal), Engineers Ireland, Engineering New Zealand, Idaho Board, Kuwait Society of Engineers, AIPE and AQPE (Spain), KIVI (Netherlands)

Engineering Council

Governance

The Engineering Council is required to satisfy the objects stated in its Charter, as further defined by its Bye-laws and Regulations. The Board sets a three-five year strategy and maintains the associated vision and mission in order to achieve this.

Our Mission

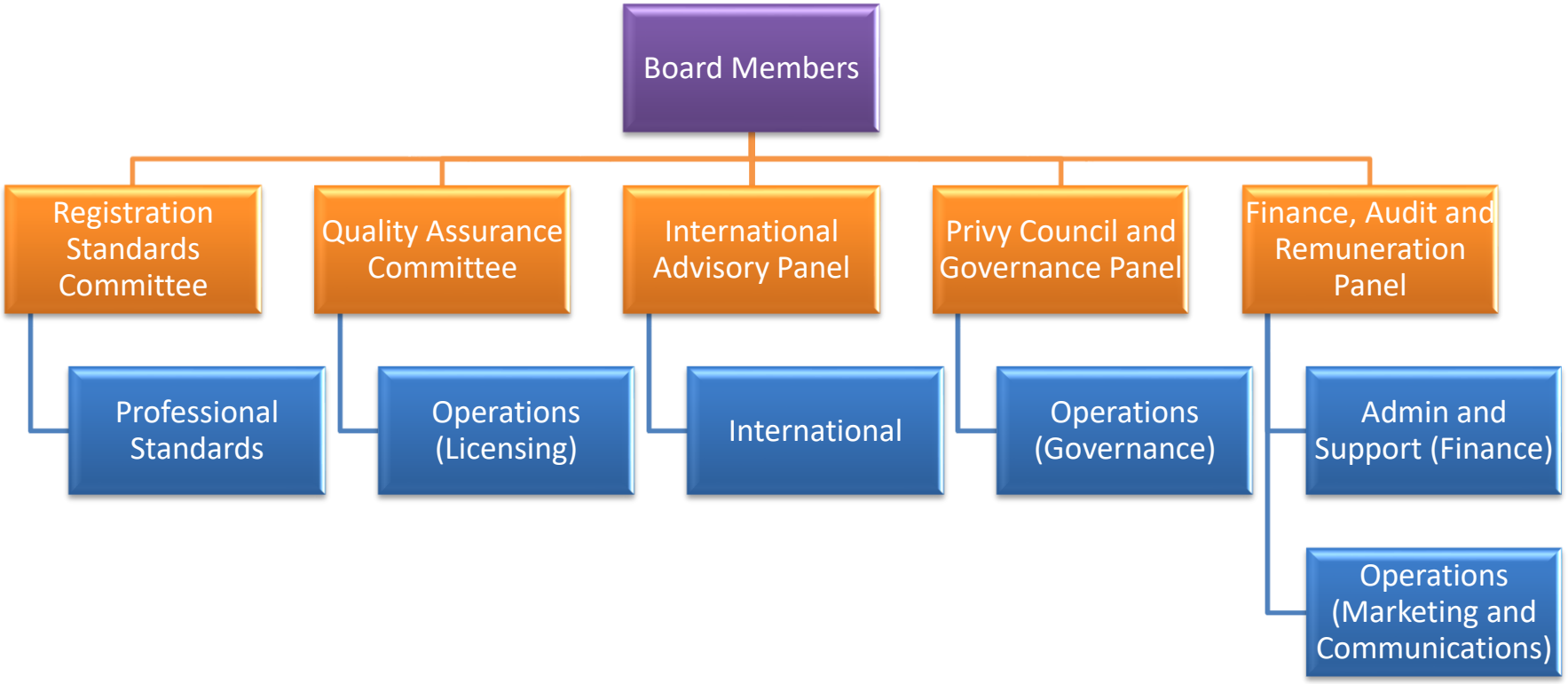
To maintain internationally recognised standards of competence and commitment for the engineering profession, and to license competent institutions to champion the standards.

Our Vision

That society continues to have confidence and trust in the engineering profession.

Engineering Council

Governance



Engineering Council

Quality assurance

Engineering Council Regulations - *"The Board delegates to the QAC its powers appertaining to licensing."*

QAC Terms of Reference

"To admit as Licensees, and award appropriate licences to, engineering institutions which are considered competent to:

- *assess applicants for entry to the Register,*
- *accredit or approve programmes of education or professional development that support admission to the Registers"*

"To monitor the performance of engineering institutions in their role as Licensees and in respect of functions for which they may be licensed as defined by the Byelaws and Regulations."

Engineering Council

Quality assurance

Standards

- UK-SPEC (UK Standard for Professional Engineering Competence)
- AHEP (Accreditation of Higher Education Programmes)
- AAQA (Approvals and Accreditation of Qualifications and Apprenticeships)
- RfR (Regulations for Registration)

Policy Statements and Guidance for Institutions

Engineering Council

How does the licensing process work?

- A new licence is awarded for up to two years.
- Existing licences can be renewed for up to 5 years.
- During the licensed period, an annual risk assessment is undertaken for each Licensee to:
  - review licensed activities of the past 12 months
  - identify the key areas of risk
  - determine how those risks are monitored for the following year

Engineering Council

How does the licensing process work?

Categories of assessment

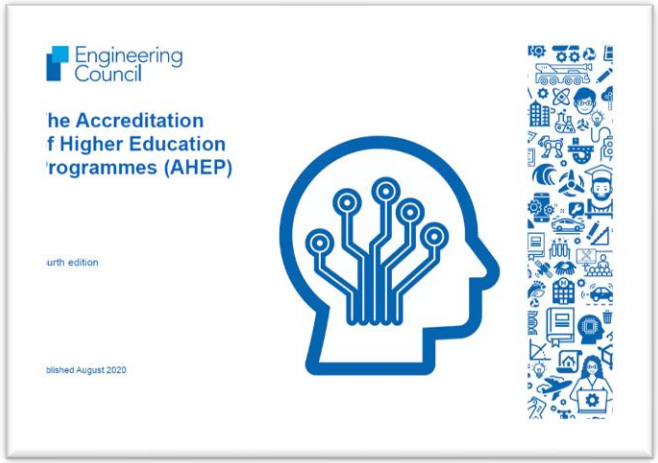
To obtain a licence, institutions must provide evidence, a ‘submission’ of documentation, across the categories of assessment:

- Governance
- Management
- Registration
- Accreditation of Academic Programmes
- Accreditation / Approval of Professional Development Schemes
- Accreditation / Approval of Qualifications and Apprenticeships
- Continuing Professional Development (CPD)
- International
- Promotion of Registration

Engineering Council

Engineering Council Standards

The Accreditation of Higher Education Programmes (AHEP) and Approval of Qualifications and Apprenticeships (AAQA) set out learning outcomes that accredited and approved programmes must deliver.



These learning outcomes are based upon the competence statements in the UK Standard for Professional Engineering Competence (UK-SPEC).

The standards are underpinned by the Regulations for Registration

Engineering Council

UK-SPEC

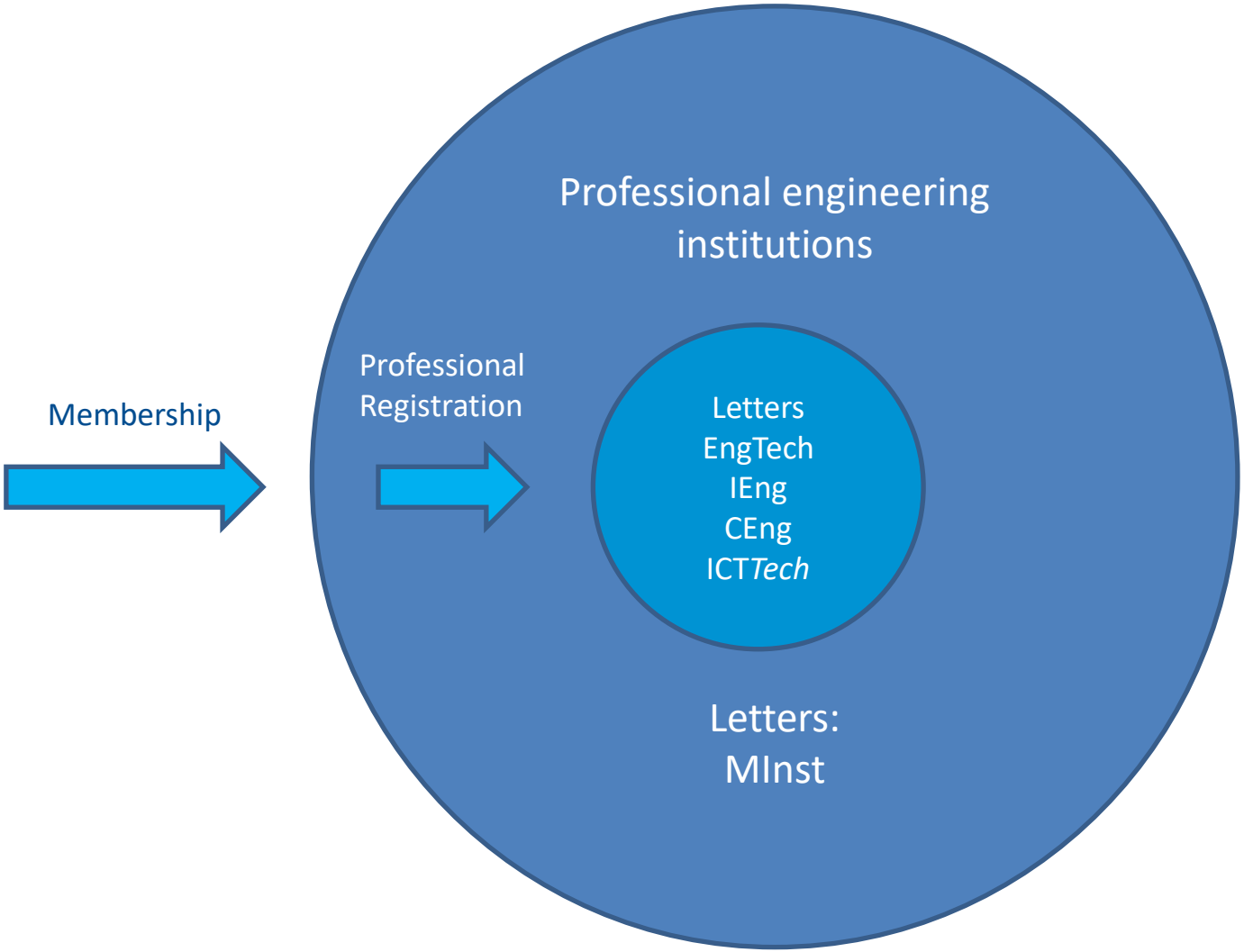
The Engineering Council sets and maintains the UK Standard for Professional Engineering Competence and Commitment

- A – Knowledge and understanding
- B – Design and development of processes, systems, services and products
- C – Responsibility, management or leadership
- D – Communication and interpersonal skills
- E – Professional commitment
- 17 sub-competences

Engineering Council

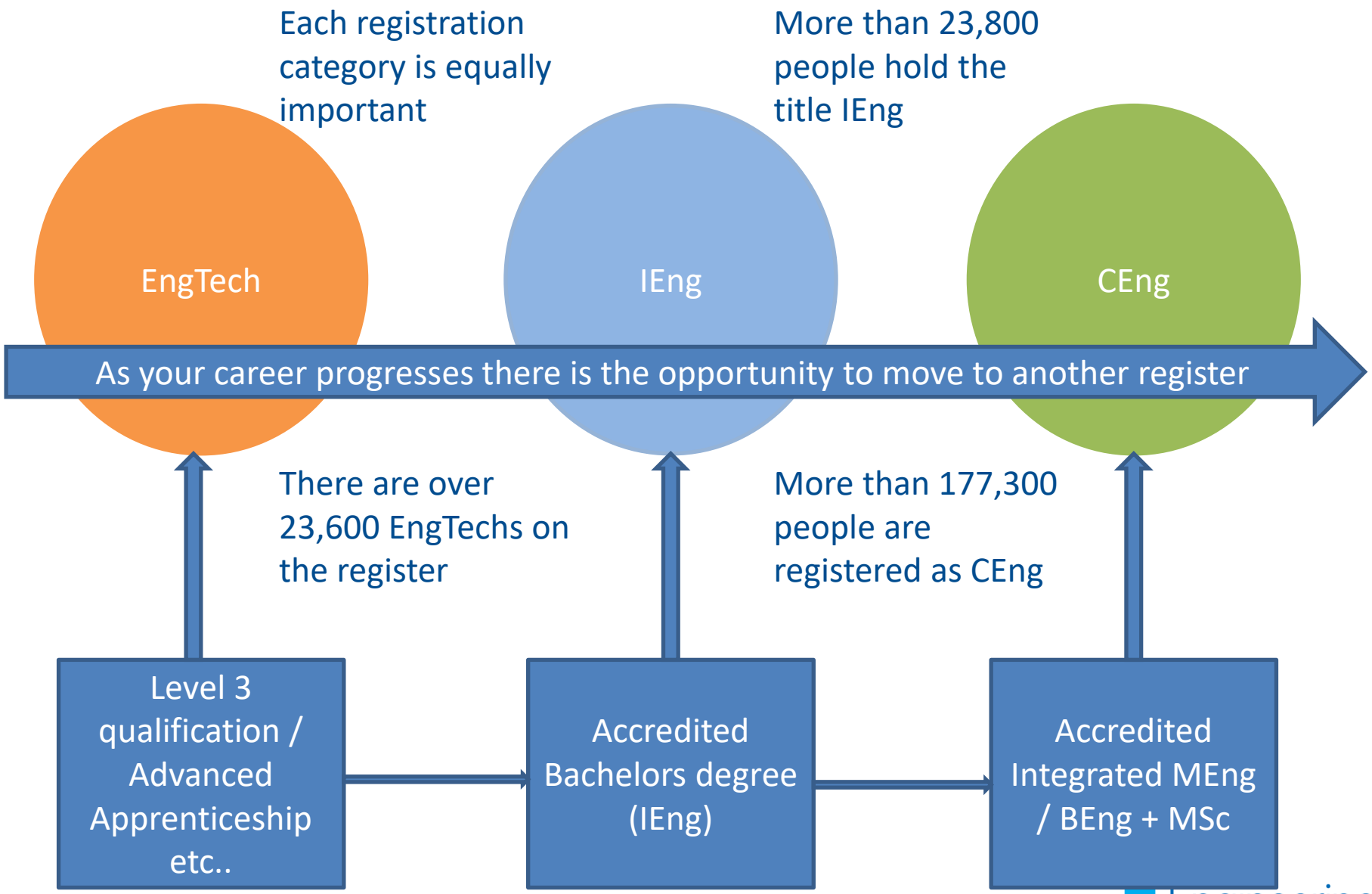
Professional registration and PEI membership

A registrant must be a member of a PEI



Engineering Council

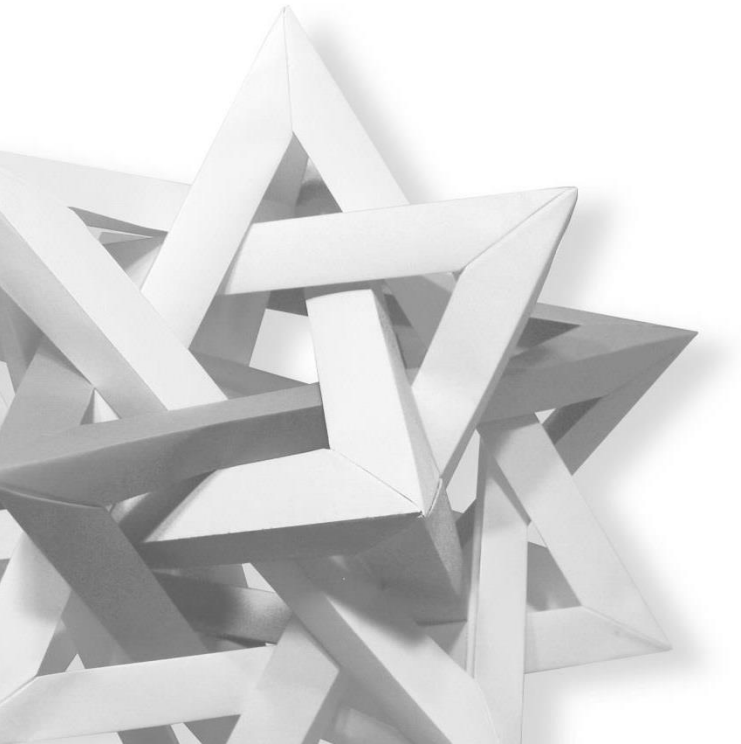
Professional registration and PEI membership



Engineering Council

Engineering Council

Competence-based Assessment



Dr Dave Clark – International Affairs Manager, EngC

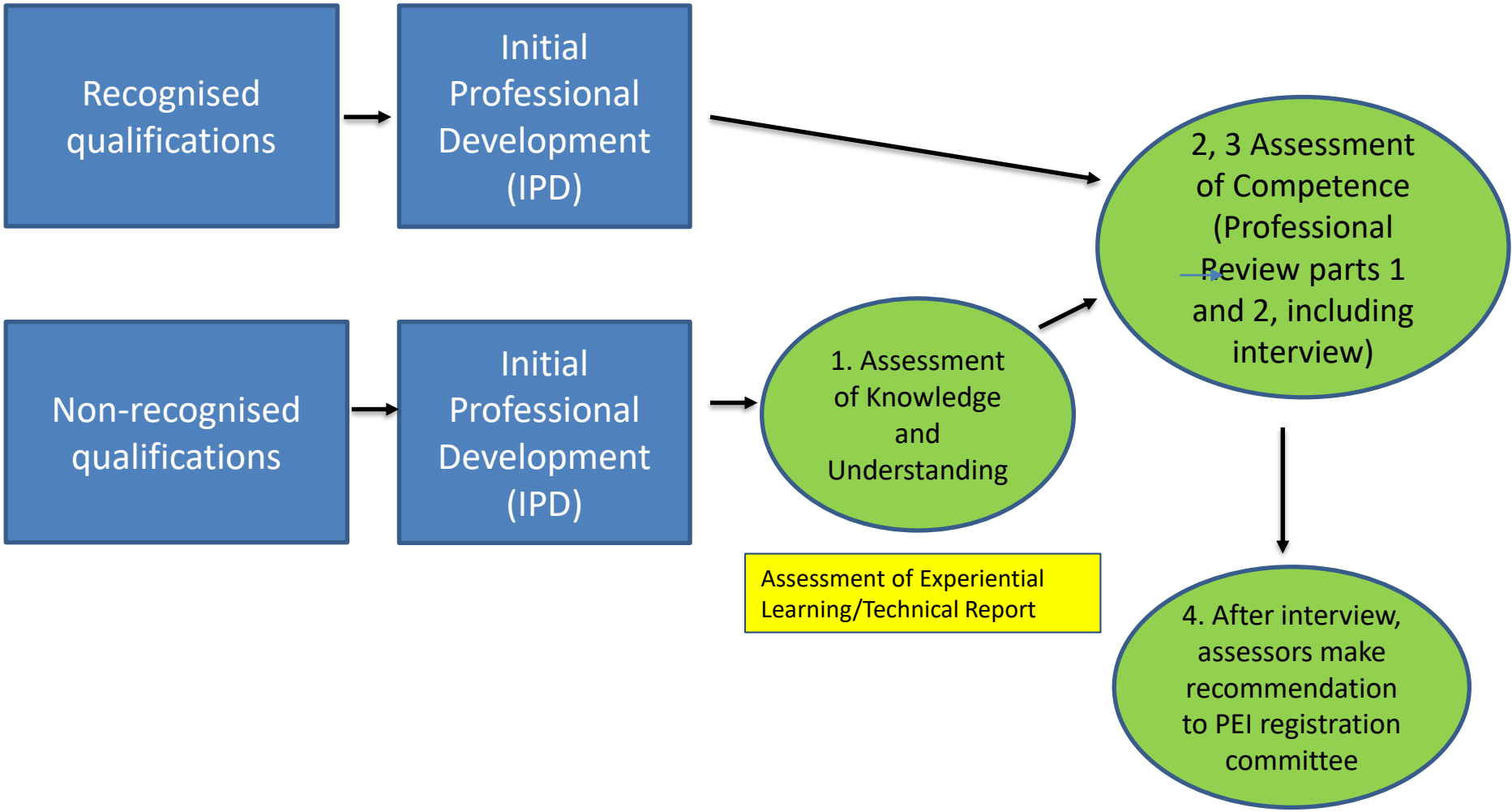
7 February 2023

Assessment stages

- Assessment of knowledge and understanding
  - In-depth for non-recognised qualifications
- Professional Review Part 1
  - Holistic assessment of competence
- Professional Review Part 2
  - Interview, including presentation
  - Recommendation
- Registration Committee
  - Final decision to award registration

Engineering Council

Routes to registration



Engineering Council

(1) Underpinning knowledge and understanding

- Initial assessment based on
  - Career history
  - Education and training record
  - Evidence of experiential (work-based) learning

- Underpinning Knowledge and Understanding demonstrated by:

  - Completing a recognised programme of learning
  - Completing other programmes of learning
  - Evidence of experiential learning
  - Submission of a technical report

  - Any combination of the above

  - Must be relevant to practice area

Engineering Council

(2) Professional Review Part 1

- Assessment of detailed documentary evidence that competences have been met
- Mapped against the UK-SPEC competences,
  or competences derived from UK-SPEC by the licensee
- Identification of areas to be probed at interview
- Two trained assessors, one with appropriate and relevant engineering experience
- Conflict of interest must be avoided
- Decision to proceed to interview, whether further information is required, or further advice needed
- Approximately 60% of applicants proceed to interview without needing to provide further information/clarification

Engineering Council

(3) Professional Review Part 2

- Interview to ascertain that all competences have been met
- Presentation
- Mapped against the UK-SPEC competences,
  or competences derived from UK-SPEC by the licensee
- Two trained assessors, one with appropriate and relevant engineering experience
- Conflict of interest must be avoided
- Reports from professional review parts 1 and 2 are submitted to the licensed member's professional registration committee (approximately 80%)

Engineering Council

(4) Licensed member’s registration committee

- Reports from professional review parts 1 and 2 are submitted to the licensed member’s professional registration committee.
- Decision whether to confirm the recommendation.
- The committee’s decisions including recommendations, justifications, feedback and moderation must be documented, transparent and auditable
- Applicant advised of outcome.
- Appeals process in place

Engineering Council

Continuing Professional Development

- At Professional Review, all applicants for registration shall demonstrate how they intend to maintain and enhance their professional competence

- Licensed members
  - Must establish and keep under review a CPD policy
  - Promoted the benefits and importance of CPD to registrants and employers
  - Offer a system for planning, recording and sharing CPD
  - Undertake an annual sample of registrants CPD records

- Failure to respond to or engage with requests to provide a CPD record can result in removal from the register

Engineering Council

Professional Standards

- Registrants also demonstrate commitment to maintain professional standards and behaviour:
  - to abide by the code of professional conduct,
  - to behave ethically,
  - to maintain competence,
  - to work within legal, regulatory, professional and technical codes. Information on professional ethics

- Guidance is available on sustainability, risk, ethical principles, whistleblowing, security

- https://www.engc.org.uk/guidance

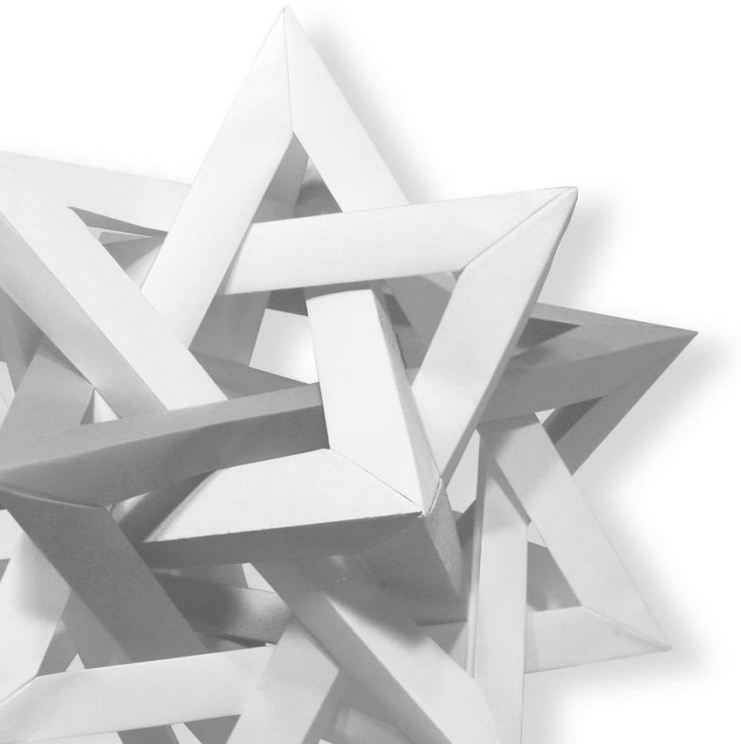
Engineering Council

International registration

- IntPE and IntET
  - CEng or IEng registration
  - An accredited degree recognised under the Washington or Sydney Accord, or equivalent academic qualification
  - The competence for independent practise as a professional engineer or engineering technologist as exemplified by the IEA competency profiles
  - At least seven years post-graduate experience
  - At least two years responsibility for significant engineering work
  - Maintaining continuing professional development.
- Applications reviewed by the International Registration Committee (IRC), reporting to the International Advisory Panel (IAP)
- Overseas IntPE and IntET seeking registration in the UK have a streamlined application process, where possible

Engineering Council

Engineering Council



Thank you

EURING@engc.org.uk

Engineering Council

APPENDIX E

The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)

Fourth edition

Published August 2020

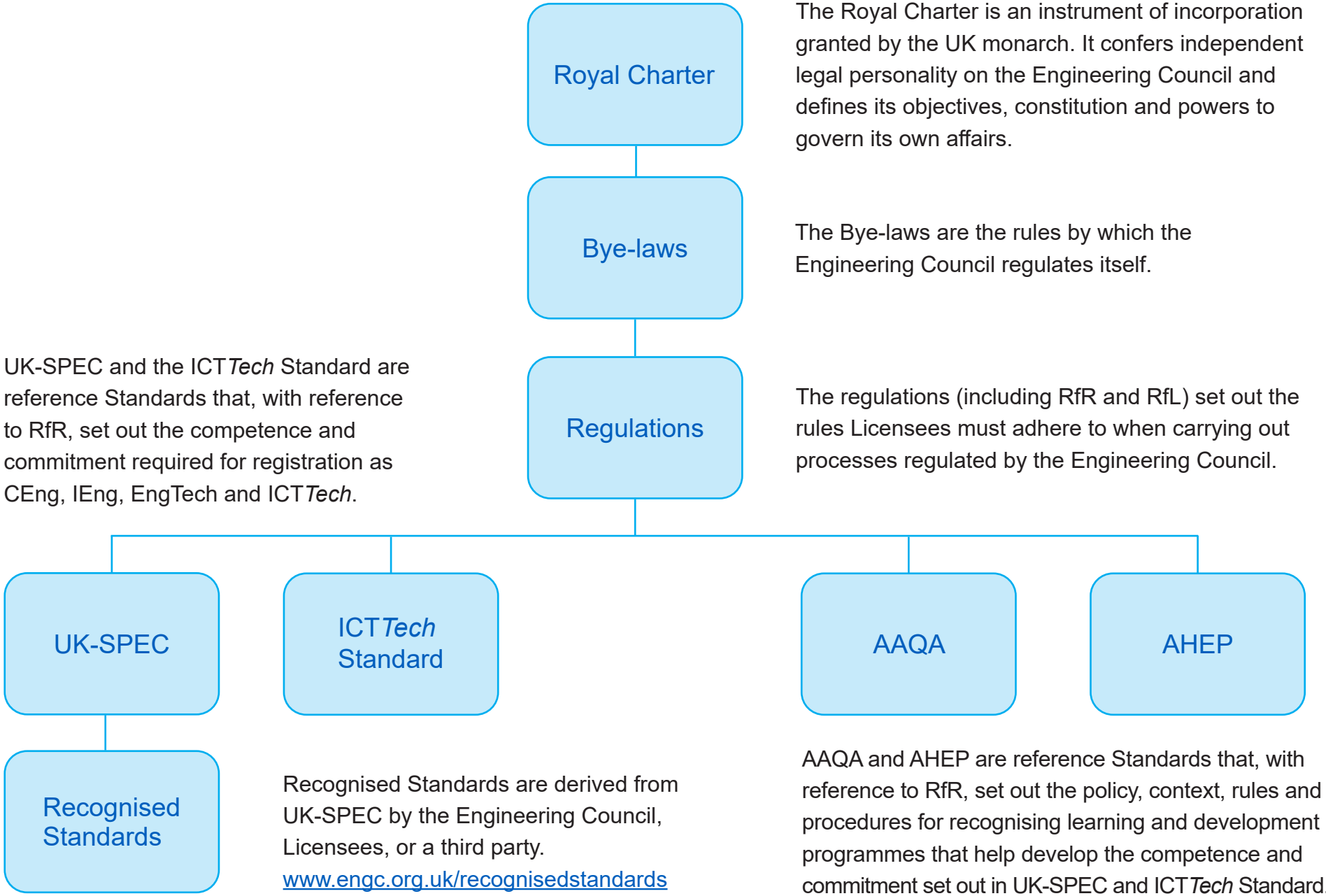
Hierarchy of regulations and standards

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:

- **Regulations for Registration (RfR)**
- **Regulations for Licensing (RfL)**
- **The UK Standard for Professional Engineering Competence and Commitment (UK-SPEC)**
- **Information and Communications Technology Technician Standard (ICT*Tech* 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.

The regulations (including RfR and RfL) set out the rules Licensees must adhere to when carrying out processes regulated by the Engineering Council.

UK-SPEC and the ICT*Tech* Standard are reference Standards that, with reference to RfR, set out the competence and commitment required for registration as CEng, IEng, EngTech and ICT*Tech*.

Recognised Standards are derived from UK-SPEC by the Engineering Council, Licensees, or a third party.
www.engc.org.uk/recognisedstandards

AAQA and AHEP are reference Standards that, with reference to RfR, 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 ICT*Tech* 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

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 UK-SPEC

This document is the UK Standard for Professional Engineering Competence and Commitment (UK-SPEC).

The primary purpose of UK-SPEC is to explain the competence and commitment requirements that people must meet and demonstrate to be registered in each of these registration categories:

- **Engineering Technician (EngTech)**
- **Incorporated Engineer (IEng)**
- **Chartered Engineer (CEng)**

This document also explains:

- Why professional registration is important
- How to achieve professional registration
- What engineers and technicians must do to maintain professional registration, including:
  - the requirement to maintain and enhance competence
  - the obligation to act with integrity and in the public interest
  - membership of a Licensee

Who UK-SPEC is for

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

- Individuals who are thinking about becoming professionally registered
- Licensees and Professional Affiliates through which engineers and technicians become registered
- Employers of engineers and technicians
- People responsible for engineers' education or training

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 also be licensed to approve or accredit programmes of learning to specific standards. Licensees are sometimes known informally as Professional Engineering Institutions, or PEIs.

Glossary

At the end of UK-SPEC there is a glossary that explains some of terms we use.

Key information

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

What is professional registration?

Professional registration verifies that an individual can meet the engineering and technological needs of today, while also anticipating the needs of, and impact on, future generations. Both in the UK and overseas, professional registration gives employers, government and society confidence in the engineering industry. In this way, professional registration offers safeguarding assurances.

Registration demonstrates that an engineer or technician has reached a set standard of knowledge, understanding and occupational competence. It also demonstrates an individual's commitment to professional standards and to developing and enhancing through Continuing Professional Development (CPD).

UK-SPEC covers three professional registration categories which are set out in Table 1 on page 7.

People who gain further qualifications or experience over the course of their careers can be assessed for another registration title. Many people continue to develop their competence to enable them to move from EngTech to IEng or CEng, or from IEng to CEng.

Why register?

Benefits for individuals: recognition, career development, earning potential

Professional registration sets individual engineers and technicians apart from those who are not registered. Gaining a professional title establishes a person's proven knowledge, understanding and competence to a set standard and demonstrates their commitment to developing and enhancing competence.

Registration increases a person's earning potential and establishes credibility with peers across the profession. The professional qualifications of EngTech, IEng and CEng are internationally recognised.

Maintaining registration requires continued membership of a Licensee. Licensees, in turn, can help registrants find development opportunities through exposure to new developments, training or networking opportunities.

In addition, the criteria of the UK-SPEC provide a useful framework for CPD, particularly for engineers and technicians aiming for a professional registration title. Achievement of registration can demonstrate a person's readiness for promotion or help them secure new roles or contracts.

Further benefits for individuals are available at:
www.engc.org.uk/benefits

Table 1: Overview of professional registration titles

Title	Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
Descriptor	Applies proven techniques and procedures to solve practical engineering problems. Applies safe systems of work.	Maintains and manages applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.	Develops solutions to engineering problems using new or existing technologies, through innovation, creativity and change. May be accountable for complex systems with significant levels of risk.
Key attributes:	1. Contribution to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services 2. Supervisory or technical responsibility 3. Effective interpersonal skills in communicating technical matters 4. Commitment to professional engineering values	1. The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques 2. Successful application of their knowledge to deliver engineering projects or services using established technologies and methods 3. Contribution to project and financial planning and management together with some responsibility for leading and developing other professional staff 4. Effective interpersonal skills in communicating technical matters 5. Commitment to professional engineering values	1. The theoretical knowledge to solve problems in new technologies and develop new analytical techniques 2. Successful application of the knowledge to deliver innovative products and services and/or take technical responsibility for complex engineering systems 3. Responsibility for financial and planning aspects of projects, sub-projects or tasks 4. Leading and developing other professional staff through management, mentoring or coaching 5. Effective interpersonal skills in communicating technical matters 6. Commitment to professional engineering values

Benefits for employers: assurance of quality

Employers of professionally registered engineers and technicians can be assured that registered engineers and technicians have:

- had their competence and credentials independently assessed
- had their credentials verified to an internationally recognised standard, and
- made a commitment to their CPD.

Employing registered professionals can help mitigate against risks and liabilities, as registrants are governed by a Code of Professional Conduct.

Maintaining registration requires continued membership of a Licensee and a commitment to CPD. This means employers can be reassured that registered employees are developing and enhancing their competence and will be exposed to new developments in their profession.

Some employers find the framework of the UK-SPEC a useful basis for their own organisational needs, such as to structure CPD. Others rely on achievement of registration to demonstrate an employee's readiness for promotion. In some cases, both in the UK and internationally, the awarding of contracts will require evidence that organisations employ professionally registered engineers.

Further benefits for employers are available at: www.engc.org.uk/employers

International context

The Engineering Council is committed to supporting its professionally registered engineers and technicians working in other countries. The professional titles EngTech, IEng and CEng are recognised widely around the world. Professional registration, as defined in UK-SPEC, reflects the requirements of global engineering.

Engineers who have developed their professional engineering competence in countries outside of the United Kingdom are welcome to join the Engineering Council register, subject to meeting the assessment criteria.

For further information see: www.engc.org.uk/international

What is engineering competence?

Competence is defined as a professional's ability to carry out engineering tasks successfully and safely within their field of practice. This includes having the individual skills, knowledge and understanding, personal behaviour and approach, to be able to work collaboratively with others to achieve the intended outcomes. Competence includes the ability to make professional judgments and an awareness of the limits of one's own ability and knowledge in order to seek assistance when required.

Each registration title requires demonstrations of competence in five broad areas:

A. Knowledge and understanding
B. Design, development and solving engineering problems
C. Responsibility, management and leadership
D. Communication and interpersonal skills
E. Professional commitment

What is professional commitment?

Registered engineering professionals are required to demonstrate a personal and professional commitment to society, to the environment and to their profession. As part of demonstrating overall competence, it is mandatory to show that they have adopted a set of values and conduct that maintains and enhances the reputation of the profession. This includes:

- Maintaining public and employee safety
- Undertaking work in a way that protects the environment and contributes to sustainable development
- Complying with codes of conduct, codes of practice and the legal and regulatory framework
- Managing, applying and improving safe systems of work
- Carrying out the CPD necessary to maintain and enhance competence in relation to duties and responsibilities
- Exercising responsibilities in an ethical manner
- Recognising inclusivity and diversity
- Adopting a security-minded approach
- Actively participating within the profession

The Engineering Council has published a CPD Code for Registrants, (see page 46), as well as guidance on risk, sustainability, whistleblowing and security (see page 47).

Ethical standards

Together with the Royal Academy of Engineering, the Engineering Council developed The Statement of Ethical Principles. This document outlines how members of the profession should conduct themselves in their working habits and relationships. The values it is based on should apply in every situation in which engineers and technicians exercise their judgment.

The Statement of Ethical Principles is available at: www.engc.org.uk/ethics

Further information on the required Standards is available from a variety of sources. Each Licensee will have its own Code of Professional Conduct, in line with the framework on Professional and Ethical Behaviour on page 47 of this document, and supporting guidance.

How to become professionally registered

Professional registration is open to all engineers and technicians who:

- Can satisfy the requirements for underpinning knowledge and understanding
- Can demonstrate competence and commitment to meet the necessary standard
- Are members of a Licensee relevant to their discipline

What are the requirements for registration?

The Engineering Council sets the Standards which need to be met for EngTech, IEng and CEng. Pages 19–45 show the requirements for all three titles. However, it is the Licensee that will carry out an assessment of an applicant's competence and commitment. The Licensee will act as the awarding body for professional registration as EngTech, IEng or CEng.

Applicants need to apply for professional registration through a Licensee relevant to their discipline. The Licensee will be able to provide details about registration, including the process and typical timescales.

The list of Licensees licensed by the Engineering Council is available at: www.engc.org.uk/licensees

A Professional Affiliate is an engineering institution which is closely associated with the Engineering Council but is not licensed to assess applicants or award registration. Some Professional Affiliates will have a registration agreement with a Licensee so that the Licensee can assess members of the Professional Affiliate for registration. These Professional Affiliate members may then apply for registration through the Licensee.

The current list of Professional Affiliates, including those which have registration agreements, is available at: www.engc.org.uk/affiliates

How are applicants assessed?

Pages 19–45 list the requirements for all three professional titles. Once a person is confident that they meet all the criteria for a professional title, they should make an application for assessment through their chosen Licensee. The assessment process is known as a Professional Review. The Licensee will provide a detailed description of the requirements and format for this.

Applicants will need to submit formal documented evidence of any relevant qualifications, experience or training and show how this relates to the required competences and commitment set out in pages 19–45 of this document.

For EngTech qualifications, depending on the Licensee, there may be an interview, or it may simply be a one-stage process assessing an applicant's submitted written evidence.

For CEng and IEng titles the Professional Review process has two stages: an assessment of written evidence and then an interview. In some engineering disciplines Licensees may specify additional methods of assessing competence and commitment.

Meeting the requirements for registration

Knowledge, understanding and skills form an essential part of competence. This provides the necessary foundation of underpinning logic and analytical capabilities. Knowledge, understanding and skills ensure that decisions are based on a full understanding of engineering practices and standards, rather than relying on instructions.

Formal education is one way of demonstrating the necessary underpinning knowledge and understanding (see Recognised Qualifications, pages 13–15), but it is not the only way (see Individual Assessment, page 16).

Figure 1: Assessment process

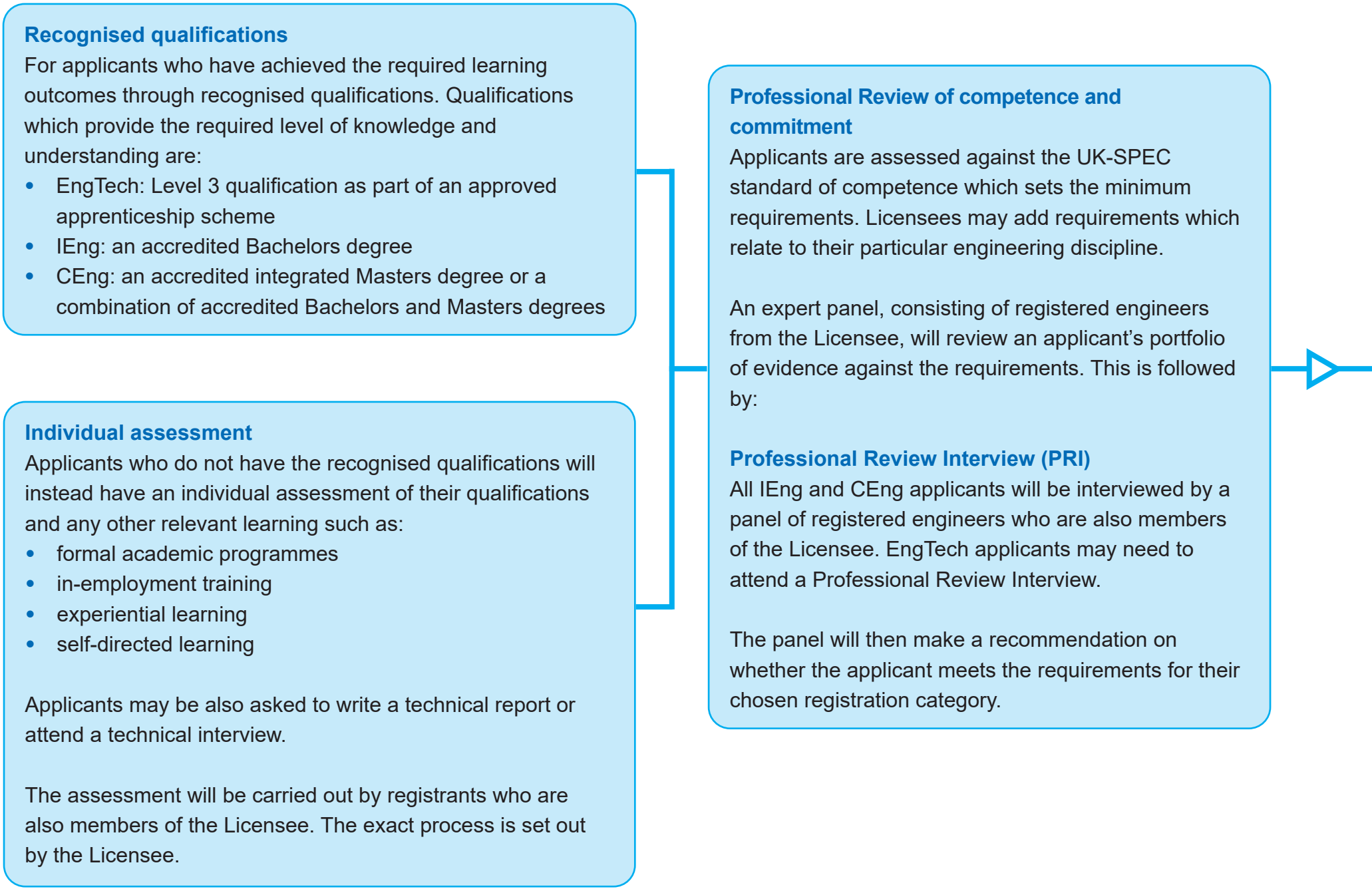


Figure 1 (continued)

Professional registration

The recommendation from the Professional Review is reviewed by the Licensee's relevant committee. The applicant will achieve professional registration if:

- The expert panel recommends that the applicant has met the requirements
- All are satisfied that all stages of the process have been completed, and
- The Licensee's relevant committee endorses the recommendation.

The applicant then becomes a registrant and is able to use the relevant post-nominal.

As a condition of continued registration, the individual commits to:

- Maintain their competence through CPD and membership of their Licensee, and
- Adhere to their Licensee's Code of Professional Conduct.

If an applicant has been unsuccessful the Licensee will provide some guidance on what further learning and/or competence development would be beneficial to achieve registration.

When all the above steps are completed to the satisfaction of the Licensee's relevant committee, the applicant achieves professional registration. They commit to maintain their CPD and membership of their Licensee and to adhere to their Licensee's Code of Professional Conduct.

Recognised qualifications

The underpinning knowledge and understanding for each registration category can be developed from recognised qualifications that deliver the appropriate learning outcomes. The recognised qualifications for each registration category are set out in Table 2. The learning outcomes are set out in detail in the Engineering Council publications Accreditation of Higher Education Programmes (AHEP) and the Approval and Accreditation of Qualifications and Apprenticeships (AAQA) Standards.

Table 2: Recognised qualifications

Engineering Technician (EngTech) One of the following:	**Incorporated Engineer (IEng)** One of the following:	**Chartered Engineer (CEng)** One of the following:

• Successful completion of an apprenticeship or other work-based learning programme approved by a Licensee
• Alongside appropriate working experience, holding a qualification, approved by a Licensee, in engineering or construction set at either:
  ▸ level 3 (or above) in the Regulated Qualifications Framework or National Qualifications Framework for England and Northern Ireland
  ▸ level 6 (or above) in the Scottish Credit and Qualifications Framework
  ▸ level 3 (or above) in the Credit and Qualifications Framework for Wales
• Alongside appropriate working experience, holding equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†
	• An accredited Bachelors or honours degree in engineering or technology
	• An accredited Higher National Certificate (HNC) or Higher National Diploma (HND) in engineering or technology started before September 1999
	• An HNC or HND started after September 1999 (but before September 2010 in the case of the HNC) or a Foundation Degree in engineering or technology, plus appropriate further learning to degree level
	• A National Vocational Qualification (NVQ) or Scottish Vocational Qualification (SVQ) at level 4 that has been approved by a Licensee, plus appropriate further learning to degree level*
	• Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†
		• An accredited Bachelors degree with honours in engineering or technology, plus either an appropriate Masters degree or engineering doctorate accredited by a Licensee, or appropriate further learning to Masters level*
		• An accredited integrated MEng degree
		• An accredited Bachelors degree with honours in engineering or technology started before September 1999
		• Equivalent qualifications or apprenticeships accredited or approved by a Licensee, or at an equivalent level in a relevant national or international qualifications framework†

* See: www.engc.org.uk/ukspec4th for qualification levels and HE reference points.

† For example, UNESCO's International Standard Classification of Education (ISCED) framework.

The Engineering Council maintains a publicly accessible recognised course search database, which is available at: www.engc.org.uk/courses

Individual assessment

Many potential registrants have not had formal training to the required level but are able to demonstrate they have acquired the necessary underpinning knowledge through substantial work experience. Applicants who have acquired their underpinning knowledge and understanding through experiential learning or other qualifications can submit the relevant information to their Licensee for an initial assessment.

This process includes assessment of the applicant's prior learning and underpinning knowledge needed to successfully perform their role. Applicants should submit information covering their education, career history and training record. It may also be helpful for applicants to include evidence of employer recognition of their competences and relevant skills.

If the Licensee considers, after this initial assessment, that it needs additional evidence of knowledge and understanding it will advise the applicant on the nature and extent of this. An applicant can demonstrate knowledge and understanding in a number of ways, such as:

- Successfully completing further qualifications, either in whole or in part,
- Providing a record of having completed work-based or experiential learning,
- Writing a technical report, based on experience, which demonstrates the applicant's knowledge and understanding of engineering principles, or
- Any combination of these.

Preparing for registration

Pages 19–45 of this document set out the competence and commitment Standards for registration as an EngTech, IEng or CEng.

Engineers seeking registration should review the competence and commitment statements and use the examples to help them identify where they already have an appropriate level of competence, as well as what evidence they can present to demonstrate this. They should also identify areas where they currently lack the appropriate competence, in order to formulate plans to develop to the required level.

Pages 19–39 also include some examples of the kind of evidence which would contribute to demonstrating competence and commitment to the required Standards. However, the list of examples is only for guidance: it is not exhaustive, and the examples are not requirements for achieving professional registration.

For all categories, those seeking registration after completing their early career training should present a detailed record of their professional development, responsibilities and experience. To enable applicants to provide the best evidence for the Professional Review, this record should be verified by supervisors or mentors.

Professional Review: assessing competence and commitment

To become professionally registered, applicants must have their competence and commitment assessed through a Professional

Review, overseen by the Licensee. This peer review process is carried out by registrants who are competent and trained to carry out this kind of assessment.

Applicants are assessed against the Standards listed in pages 19–45 of this document, which may be adapted by the Licensee to relate specifically to the particular technologies or industries it is concerned with. There is no prescribed time period or minimum age requirement for the development of competence and commitment. The length of time it takes depends on many factors such as a person's prior qualifications or experience, their job role, as well as personal circumstances such as career breaks or part time working.

Scrutiny of qualifications

The first stage of the Professional Review is an assessment of the documented evidence which the applicant has submitted. The applicant's Licensee will specify the requirements for this submission. The Licensee will examine the examples of evidence and assess how they meet the underpinning knowledge, understanding and competence requirements.

Applicants will need to submit evidence in support of their application such as their:

- Educational record and qualifications
- Professional qualifications awarded by other national, regional or international authorities
- Structured or other professional development
- Areas of responsibility, management and leadership
- Evidence of effective interpersonal skills
- A plan for future professional development

Professional Review

After the submitted evidence has been reviewed, the Licensee will decide whether the applicant is ready to proceed to Professional Review. The Licensee will be able to advise applicants how to best present their evidence of training and experience. If there are shortfalls in evidence, Licensees will usually be able to suggest ways in which the applicant can address them. This may involve further learning, training or additional experience.

Once the submitted evidence has been accepted as a basis for the review, the next stage is a Professional Review Interview (PRI). This is mandatory for IEng and CEng applicants. For EngTech applicants there may be an interview, at the discretion of the Licensee, or the Professional Review may be based solely on the submitted documents.

When the Professional Review has been completed, the peer reviewers will make a recommendation to the Licensee's designated committee. The committee will then make a decision on whether the applicant has demonstrated that they meet the required standards. A positive decision will result in registration of the applicant as an EngTech, IEng or CEng. Where the applicant has been unsuccessful the Licensee will provide feedback to help the applicant overcome any shortfalls in competence.

Retention of the title requires:

- Continued membership of either:
  - a Licensee licensed for that title or
  - a Professional Affiliate which has a registration agreement with a Licensee licensed for that title,

  and:
- Payment of an annual fee,

  and:
- Undertaking and recording Continuing Professional Development (CPD).

For more information please see: www.engc.org.uk/cpd

The Engineering Technician (EngTech) Standard

Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems.

Engineering Technicians shall demonstrate:

- Engineering knowledge and understanding to apply technical and practical skills
- Evidence of their contribution to the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services
- Supervisory or technical responsibility
- Effective interpersonal skills in communicating technical matters
- The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability
- Commitment to professional engineering values

An Engineering Technician will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the context, nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (A1–E5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in those areas of limited experience as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Engineering Technician level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Engineering Technician registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

Competence		Examples of evidence
A. Knowledge and understanding **Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.** 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.	**The applicant shall demonstrate that they:** 1. Review and select appropriate techniques, procedures and methods to undertake tasks	• Evaluating potential methods of carrying out an engineering task and selecting the most appropriate solution • Recognising a difficulty and then identifying an approach to resolve it • Identifying an improvement in a technique, procedure, process or method • Interpreting and carrying out test procedures
	2. Use appropriate scientific, technical or engineering principles.	• Drawing on your technical knowledge to complete a task • Performing calculations using standard formulae • Analysing performance or test data or comparing performance information with published material
B. Design, development and solving engineering problems **Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services.** 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.	**The applicant shall demonstrate that they:** 1. Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions	• Using knowledge to identify a problem or an opportunity for improvement • Investigating a problem to identify the underlying cause • Identifying a solution to a problem or an improvement opportunity • Contributing to the design of an item or process
	2. Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.	• Balancing these factors in selecting appropriate materials • Identifying precautions as a result of evaluating risks and other factors • Considering how waste can be minimised, recycled or disposed of safely if recycling is not possible • Contributing to best practice methods of continuous improvement • Improving the quality of an operation or process

Competence		Examples of evidence
C. Responsibility, management and leadership **Engineering Technicians shall accept and exercise personal responsibility.** 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.	The applicant shall demonstrate that they: 1. Work reliably and effectively without close supervision, to the appropriate codes of practice	• Completing challenging tasks successfully within your area of work • Identifying issues which fall outside of your current knowledge and seeking advice • Identifying standards and codes of practice relevant to a new task
	2. Accept responsibility for the work of themselves or others	• Fully understanding drawings, permits to work, instructions or other similar documents after appropriate checking, and identifying issues • Inspecting work carried out by others • Checking the status of equipment, the work environment and facilities and taking appropriate actions before commencing work
	3. Accept, allocate and supervise technical and other tasks.	• Ensuring that the scope of a task is clear before accepting and/or allocating it to others • Querying any aspect of a task which is not clear and/or providing an explanation if a query is raised by others • Learning from your own experience and/or providing constructive feedback when supervising or working with others

Competence		Examples of evidence
D. Communication and interpersonal skills **Engineering Technicians shall use effective communication and interpersonal skills.** This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	**The applicant shall demonstrate that they:** 1. Communicate effectively with others, at all levels, in English	• Contributing to meetings and discussions • Preparing communications, documents and reports on technical matters • Exchanging information and providing advice to technical and non-technical colleagues
	2. Work effectively with colleagues, clients, suppliers or the public	• Contributing constructively as part of a team • Successfully resolving issues in discussions with team members, suppliers, clients and/or others • Persuading others to accept suggestions or recommendations • Identifying, agreeing and working towards collective goals
	3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion

Competence		Examples of evidence
E. Personal and professional commitment **Engineering Technicians shall demonstrate commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.** 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.	**This shall include the ability to:** 1. Understand and comply with relevant codes of conduct	• Demonstrating compliance with your Licensee's Code of Professional Conduct • Working within all relevant legislative and regulatory frameworks, including social and employment legislation
	2. Understand the safety implications of their role and apply safe systems of work	• Providing evidence of applying current safety requirements, such as risk assessment and other examples of good practice you adopt in your work • A sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies
	3. Understand the principles of sustainable development and apply them in their work	• Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48, can be applied in your day-to-day work • Identifying actions that you can and have taken to improve sustainability
	4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out and recording planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD
	5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47 • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company

The Incorporated Engineer (IEng) Standard

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation.

Incorporated Engineers shall demonstrate:

- The theoretical knowledge to solve problems in established technologies using well proven analytical techniques
- Successful application of the knowledge to deliver engineering tasks or services using established technologies and methods
- Contribution to the financial and planning aspects of projects or tasks and contribution to leading and developing other professional staff
- Effective interpersonal skills in communicating technical matters
- The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability
- Commitment to professional engineering values

An Incorporated Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area (A1–E5) at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they must demonstrate an appropriate balance of competences to perform their role effectively at Incorporated Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Incorporated Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

Competence		Examples of evidence
A. Knowledge and understanding **Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.** 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.	The applicant shall demonstrate that they: 1. Have maintained and extended a sound theoretical approach to the application of technology in engineering practice	• Identifying the limits of your knowledge and skills • Taking steps to develop and extend personal knowledge of appropriate technology, both current and emerging • Applying newly gained knowledge successfully in a task or project • Reviewing current procedures and processes and recommended improvements or changes to reflect best practice • Developing knowledge needed to work in a new industry area or discipline
	2. Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.	• Applying knowledge and experience to investigate and solve problems arising during engineering tasks and implementing corrective action • Identifying opportunities for improvements and how these have been (or could be) implemented • Using an established process to analyse issues and establish priorities

Competence		Examples of evidence
B. Design, development and solving engineering problems **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.** 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.	**The applicant shall demonstrate that they:** 1. Identify, review and select techniques, procedures and methods to undertake engineering tasks	• Establishing the engineering steps needed to carry out a task efficiently • Identifying the available products or processes needed to undertake an engineering task and establishing a means of identifying the most suitable solution • Preparing technical specifications • Reviewing and comparing responses to the technical aspects of tender invitations • Establishing user requirements for improvements
	2. Contribute to the design and development of engineering solutions	• Contributing to the identification and specification of design and development requirements for engineering products, processes, systems and services • Identifying operational risks and evaluating possible engineering solutions, taking account of cost, quality, safety, reliability, accessibility, appearance, fitness for purpose, security (including cyber security), intellectual property constraints and opportunities, and environmental impact • Collecting and analysing results • Carrying out necessary tests
	3. Implement design solutions for equipment or processes and contribute to their evaluation.	• Identifying the resources required for implementation • Implementing design solutions, taking account of critical constraints, including due concern for safety and sustainability • Identifying problems during implementation and taking corrective action • Contributing to recommendations for improvement and actively learning from feedback on results

Competence		Examples of evidence
C. Responsibility, management and leadership **Incorporated Engineers shall provide technical and commercial management.** 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.	**The applicant shall demonstrate that they:** 1. Plan the work and resources needed to enable effective implementation of engineering tasks and projects	• Identifying factors affecting the project implementation • Carrying out holistic and systematic risk identification, assessment and management • Preparing and agreeing implementation plans and method statements • Securing the necessary resources and confirming roles in a project team • Applying the necessary contractual arrangements with other stakeholders (clients, subcontractors, suppliers, etc)
	2. Manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects	• Operating appropriate management systems • Working to the agreed quality standards, programme and budget, within legal and statutory requirements • Managing work teams, coordinating project activities • Identifying variations from quality standards, programme and budgets, and taking corrective action • Evaluating performance and recommending improvements
	3. Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs	• Agreeing objectives and work plans with teams and individuals • Reinforcing team commitment to professional standards • Leading and supporting team and individual development • Assessing team and individual performance, and providing feedback • Seeking input from other teams or specialists where needed and managing the relationship
	4. Take an active role in continuous quality improvement.	• Ensuring the application of quality management principles by team members and colleagues • Managing operations to maintain quality standards eg ISO 9000, EQFM • Evaluating projects and making recommendations for improvement • Implementing and sharing the results of lessons learned

Competence		Examples of evidence
D. Communication and interpersonal skills **Incorporated Engineers shall demonstrate effective communication and interpersonal skills.** This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	**The applicant shall demonstrate that they:** 1. Communicate effectively with others, at all levels, in English	• Contributing to, chairing and recording meetings and discussions • Preparing communications, documents and reports on technical matters • Exchanging information and providing advice to technical and non-technical colleagues • Engaging or interacting with professional networks
	2. Clearly present and discuss proposals, justifications and conclusions	• Preparing and delivering appropriate presentations • Managing debates with audiences • Feeding the results back to improve the proposals • Contributing to the awareness of risk
	3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Identifying, agreeing and working towards collective goals • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion

Competence		Examples of evidence
E. Personal and professional commitment **Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** 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.	**The applicant shall demonstrate that they:** 1. Understand and comply with relevant codes of conduct	• Demonstrating compliance with your Licensee's Code of Professional Conduct • Identifying aspects of the Code particularly relevant to your role • Managing work within all relevant legislative and regulatory frameworks, including social and employment legislation
	2. Understand the safety implications of their role and manage, apply and improve safe systems of work	• Identifying and taking responsibility for your own obligations for health, safety and welfare issues • Managing systems that satisfy health, safety and welfare requirements • Developing and implementing appropriate hazard identification and risk management systems and culture • Managing, evaluating and improving these systems • Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies
	3. Understand the principles of sustainable development and apply them in their work	• Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously • Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48 can be applied in your day-to-day work • Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives • Understanding and encouraging stakeholder involvement in sustainable development • Using resources efficiently and effectively • Taking action to minimise environmental impact in your area of responsibility

Competence		Examples of evidence
E. Personal and professional commitment (continued)	The applicant shall demonstrate that they: 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out and recording planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD
	5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47 • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company

The Chartered Engineer (CEng) Standard

Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis.

Chartered Engineers shall demonstrate:

- The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques
- Successful application of the knowledge to deliver innovative products and services or taking technical responsibility for complex engineering systems
- Responsibility for the financial and planning aspects of projects, sub-projects or tasks
- Leadership and development of other professional staff through management, mentoring or coaching
- Effective interpersonal skills in communicating technical matters
- Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible
- Commitment to professional engineering values

A Chartered Engineer will be able to demonstrate their competence in all of the areas listed, but the depth and extent of their experience and competence will vary with the nature and requirements of their role. They will demonstrate a level of competence and commitment in each area, (A1–E5), at a level which is consistent with their specific role. It is to be expected that they will have a higher level of competence in some areas than others and their role may provide limited experience in certain areas. However, they need to demonstrate an understanding of, and familiarity with, the key aspects of competence in all areas as a minimum requirement while demonstrating higher levels of competence in those areas which are critical to their role. Overall, they will demonstrate an appropriate balance of competences to perform their role effectively at Chartered Engineer level.

The examples of evidence are intended as guidance to help identify activities that might demonstrate the required competence and commitment for Chartered Engineer registration. They are intended as examples only as the most appropriate evidence will vary with each individual role. The list is not exhaustive and other types of evidence might be valid. There is no requirement to provide multiple examples of evidence for each area of competence, but examples from two or three projects or tasks would be useful.

Competence		Examples of evidence
A. Knowledge and understanding **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 or dealing 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.	**The applicant shall demonstrate that they:** 1. Have maintained and extended a sound theoretical approach to enable them to develop their particular role	• Formal training related to your role • Learning and developing new engineering knowledge in a different industry or role • Understanding the current and emerging technology and technical best practice in your area of expertise • Developing a broader and deeper knowledge base through research and experimentation • Learning and developing new engineering theories and techniques in the workplace
	2. Are developing 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.	• Carrying out technical research and development • Developing new designs, processes or systems based on new or evolving technology • Carrying out complex and/or non-standard technical analyses • Developing solutions involving complex or multi-disciplinary technology • Developing and evaluating continuous improvement systems • Developing solutions in safety-critical industries or applications

Competence		Examples of evidence
B. Design, development and solving engineering problems **Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.** 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.	The applicant shall demonstrate that they: 1. Take an active role in the identification and definition of project requirements, problems and opportunities	• Identifying projects or technical improvements to products, processes or systems • Preparing specifications, taking account of functional and other requirements • Establishing user requirements • Reviewing specifications and tenders to identify technical issues and potential improvements • Carrying out technical risk analysis and identifying mitigation measures • Considering and implementing new and emerging technologies
	2. Can 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	• Identifying and agreeing appropriate research methodologies • Investigating a technical issue, identifying potential solutions and determining the factors needed to compare them • Identifying and carrying out physical tests or trials and analysing and evaluating the results • Carrying out technical simulations or analysis • Preparing, presenting and agreeing design recommendations, with appropriate analysis of risk, and taking account of cost, quality, safety, reliability, accessibility, appearance, fitness for purpose, security (including cyber security), intellectual property constraints and opportunities, and environmental impact

Competence		Examples of evidence
B. Design, development and solving engineering problems (continued)	The applicant shall demonstrate that they: 3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.	• Ensuring that the application of the design results in the appropriate practical outcome • Implementing design solutions, taking account of critical constraints, including due concern for safety, sustainability and disposal or decommissioning • Identifying and implementing lessons learned • Evaluating existing designs or processes and identifying faults or potential improvements including risk, safety and life cycle considerations • Actively learning from feedback on results to improve future design solutions and build best practice

Competence		Examples of evidence
C. Responsibility, management and leadership **Chartered Engineers shall demonstrate technical and commercial leadership.** 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 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.	**The applicant shall demonstrate that they:** 1. Plan the work and resources needed to enable effective implementation of a significant engineering task or project	• Preparing budgets and associated work programmes for projects or tasks • Systematically reviewing the factors affecting the project implementation including safety, sustainability and disposal or decommissioning considerations • Carrying out a task or project risk assessment and identifying mitigation measures • Leading on preparing and agreeing implementation plans and method statements • Negotiating and agreeing arrangements with customers, colleagues, contractors and other stakeholders, including regulatory bodies • Ensuring that information flow is appropriate and effective
	2. Manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project	• Operating or defining appropriate management systems including risk registers and contingency systems • Managing the balance between quality, cost and time • Monitoring progress and associated costs and cost forecasts, taking appropriate actions when required • Establishing and maintaining appropriate quality standards within legal and statutory requirements • Interfacing effectively with customers, contractors and other stakeholders

Competence		Examples of evidence
C. Responsibility, management and leadership (continued)	The applicant shall demonstrate that they: 3. Lead teams or technical specialisms and assist others to meet changing technical and managerial needs	• Agreeing objectives and work plans with teams and individuals • Reinforcing team commitment to professional standards • Leading and supporting team and individual development • Assessing team and individual performance, and providing feedback • Seeking input from other teams or specialists where needed and managing the relationship • Providing specialist knowledge, guidance and input in your specialism to engineering teams, engineers, customers, management and relevant stakeholders • Developing and delivering a teaching module at Masters level, or leading a University research programme
	4. Bring about continuous quality improvement and promote best practice.	• Promoting quality throughout the organisation as well as its customer and supplier networks • Developing and maintaining operations to meet quality standards eg ISO 9000, EQFM • Supporting or directing project evaluation and proposing recommendations for improvement • Implementing and sharing the results of lessons learned

Competence		Examples of evidence
D. Communication and interpersonal skills **Chartered Engineers shall demonstrate effective communication and interpersonal skills.** This is the ability to work with others constructively, to explain ideas and proposals clearly and to discuss issues objectively and constructively.	The applicant shall demonstrate that they: 1. Communicate effectively with others, at all levels, in English	• Preparing reports, drawings, specifications and other documentation on complex matters • Leading, chairing, contributing to and recording meetings and discussions • Exchanging information and providing advice to technical and non-technical colleagues • Engaging or interacting with professional networks
	2. Clearly present and discuss proposals, justifications and conclusions	• Contributing to scientific papers or articles as an author • Preparing and delivering presentations on strategic matters • Preparing bids, proposals or studies • Identifying, agreeing and leading work towards collective goals
	3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	• Knowing and managing own emotions, strengths and weaknesses • Being confident and flexible in dealing with new and changing interpersonal situations • Identifying, agreeing and working towards collective goals • Creating, maintaining and enhancing productive working relationships, and resolving conflicts • Being supportive of the needs and concerns of others, especially where this relates to diversity and inclusion

Competence		Examples of evidence
E. Personal and professional commitment **Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** 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.	**The applicant shall demonstrate that they:** 1. Understand and comply with relevant codes of conduct	• Demonstrating compliance with your Licensee's Code of Professional Conduct • Identifying aspects of the Code which are particularly relevant to your role • Being aware of the legislative and regulatory frameworks relevant to your role and how they conform to them • Leading work within relevant legislation and regulatory frameworks, including social and employment legislation
	2. Understand the safety implications of their role and manage, apply and improve safe systems of work	• Identifying and taking responsibility for your own obligations and ensuring that others assume similar responsibility for health, safety and welfare issues • Ensuring that systems satisfy health, safety and welfare requirements • Developing and implementing appropriate hazard identification and risk management systems and culture • Managing, evaluating and improving these systems • Applying a sound knowledge of health and safety legislation, for example: HASAW 1974, CDM regulations, ISO 45001 and company safety policies

Competence		Examples of evidence
E. Personal and professional commitment (continued)	The applicant shall demonstrate that they: 3. Understand the principles of sustainable development and apply them in their work	• Operating and acting responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously • Providing products and services which maintain and enhance the quality of the environment and community, and meet financial objectives • Recognising how sustainability principles, as described in the Guidance on Sustainability on page 48, can be applied in your day-to-day work • Understanding and securing stakeholder involvement in sustainable development • Using resources efficiently and effectively in all activities • Taking action to minimise environmental impact in your area of responsibility
	4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	• Undertaking reviews of your own development needs • Planning how to meet personal and organisational objectives • Carrying out planned and unplanned CPD activities • Maintaining evidence of competence development • Evaluating CPD outcomes against any plans made • Assisting others with their own CPD
	5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	• Understanding the ethical issues that you may encounter in your role • Giving an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 47 • Giving an example of where you have applied or upheld ethical principles as defined by your organisation or company

Comparison table for EngTech, IEng and CEng Standards

This table can also be downloaded as a PDF, along with a version which includes examples of the types of evidence.
Please see: www.engc.org.uk/ukspec

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
Engineering Technicians apply proven techniques and procedures to the solution of practical engineering problems. Engineering Technicians shall demonstrate: • Engineering knowledge and understanding to apply technical and practical skills • Evidence of their contribution to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes or services • Supervisory or technical responsibility • Effective interpersonal skills in communicating technical matters • The ability to operate in accordance with safe systems of work and to demonstrate appropriate understanding of the principles of sustainability • Commitment to professional engineering values.	Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation. Incorporated Engineers shall demonstrate: • The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques • Successful application of their knowledge to deliver engineering projects or services using established technologies and methods • Contribution to the financial and planning aspects of projects or tasks and to leading and developing other professional staff • Effective interpersonal skills in communicating technical matters • The ability to specify and operate to safe systems of work and to demonstrate appropriate consideration of the principles of sustainability • Commitment to professional engineering values.	Chartered Engineers develop solutions to complex engineering problems using new or existing technologies, and through innovation, creativity and technical analysis. Chartered Engineers shall demonstrate: • The theoretical knowledge to solve problems in new and established technologies and to develop new analytical techniques • Successful application of the knowledge to deliver innovative products and services and/or taking technical responsibility for complex engineering systems • Responsibility for the financial and planning aspects of projects, sub-projects or tasks • Leadership and development of other professional staff through management, mentoring or coaching • Effective interpersonal skills in communicating technical matters • Understanding of the safety and sustainability implications of their work, seeking to improve aspects where feasible • Commitment to professional engineering values.

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
The Competence and Commitment Standard for Engineering Technicians For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as an Engineering Technician, see the table on pages 20–23. Engineering Technicians must be competent throughout their working life, by virtue of their education, training and experience in the following ways:	**The Competence and Commitment Standard for Incorporated Engineers** For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as an Incorporated Engineer, see the table on pages 25–30. Incorporated Engineers must be competent throughout their working life, by virtue of their education, training and experience in the following ways:	**The Competence and Commitment Standard for Chartered Engineers** For guidance and examples of types of evidence that demonstrate the required competence and commitment for registration as a Chartered Engineer, see the table on pages 32–39. Chartered Engineers must be competent throughout their working life, by virtue of their education, training and experience in the following ways:
A. Knowledge and understanding **Engineering Technicians shall use engineering knowledge and understanding to apply technical and practical skills.** The applicant shall demonstrate that they: 1. Review and select appropriate techniques, procedures and methods to undertake tasks 2. Use appropriate scientific, technical or engineering principles.	A. Knowledge and understanding **Incorporated Engineers shall use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology**. The applicant shall demonstrate that they: 1. Have maintained and extended a sound theoretical approach to the application of technology in engineering practice 2. Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.	A. Knowledge and understanding **Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems**. The applicant shall demonstrate that they: 1. Have maintained and extended a sound theoretical approach to enable them to develop their particular role 2. Are developing 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.

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
B. Design, development and solving engineering problems	B. Design, development and solving engineering problems	B. Design, development and solving engineering problems
Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services. The applicant shall demonstrate that they: 1. Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions 2. Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.	**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.** The applicant shall demonstrate that they: 1. Identify, review and select techniques, procedures and methods to undertake engineering tasks 2. Contribute to the design and development of engineering solutions 3. Implement design solutions for equipment or processes and contribute to their evaluation.	**Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.** The applicant shall demonstrate that they: 1. Take an active role in the identification and definition of project requirements, problems and opportunities 2. Can 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 3. Can implement engineering tasks and evaluate the effectiveness of engineering solutions.

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
C. Responsibility, management and leadership **Engineering Technicians shall accept and exercise personal responsibility.** The applicant shall demonstrate that they: 1. Work reliably and effectively without close supervision, to the appropriate codes of practice 2. Accept responsibility for the work of themselves or others 3. Accept, allocate and supervise technical and other tasks.	C. Responsibility, management and leadership **Incorporated Engineers shall provide technical and commercial management.** The applicant shall demonstrate that they: 1. Plan the work and resources needed to enable effective implementation of engineering tasks and projects 2. Manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects 3. Manage teams, or the input of others, into own work and assist others to meet changing technical and management needs 4. Take an active role in continuous quality improvement.	C. Responsibility, management and leadership **Chartered Engineers shall provide technical and commercial leadership.** The applicant shall demonstrate that they: 1. Plan the work and resources needed to enable effective implementation of a significant engineering task or project 2. Manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project 3. Lead teams or technical specialisms and assist others to meet changing technical and managerial needs 4. Bring about continuous quality improvement and promote best practice.

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
D. Communication and interpersonal skills **Engineering Technicians shall use effective communication and interpersonal skills.** The applicant shall demonstrate that they: 1. Communicate effectively with others, at all levels, in English 2. Work effectively with colleagues, clients, suppliers or the public 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	**D. Communication and interpersonal skills** **Incorporated Engineers shall demonstrate effective communication and interpersonal skills.** The applicant shall demonstrate that they: 1. Communicate effectively with others, at all levels, in English 2. Clearly present and discuss proposals, justifications and conclusions 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.	**D. Communication and interpersonal skills** **Chartered Engineers shall demonstrate effective communication and interpersonal skills.** The applicant shall demonstrate that they: 1. Communicate effectively with others, at all levels, in English 2. Clearly present and discuss proposals, justifications and conclusions 3. Demonstrate personal and social skills and awareness of diversity and inclusion issues.

Engineering Technician (EngTech)	Incorporated Engineer (IEng)	Chartered Engineer (CEng)
E. Personal and professional commitment **Engineering Technicians shall demonstrate a personal commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment.** The applicant shall demonstrate that they: 1. Understand and comply with relevant codes of conduct 2. Understand the safety implications of their role and apply safe systems of work 3. Understand the principles of sustainable development and apply them in their work 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	**E. Personal and professional commitment** **Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** The applicant shall demonstrate that they: 1. Understand and comply with relevant codes of conduct 2. Understand the safety implications of their role and manage, apply and improve safe systems of work 3. Understand the principles of sustainable development and apply them in their work 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	**E. Personal and professional commitment** **Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.** The applicant shall demonstrate that they: 1. Understand and comply with relevant codes of conduct 2. Understand the safety implications of their role and manage, apply and improve safe systems of work 3. Understand the principles of sustainable development and apply them in their work 4. Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice 5. Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.

Continuing Professional Development

Continuing professional development (CPD) is essential for maintaining and enhancing the required competence and commitment, as well as for developing new competences. This obligation underpins the value of the professional titles of EngTech, IEng and CEng, and enables society to have confidence in the engineering profession.

CPD has several purposes:

- To assure continuing competence in a current job
- To prepare for a different role
- To follow a longer-term career development plan
- To enhance professionalism in a wider context than a specific job role.

More details on the nature, purpose and value of CPD can be found in the CPD Policy Statement.

For more information please see: www.engc.org.uk/cpd

CPD Code for Registrants

Engineering professionals should take all necessary steps to maintain and enhance their competence through CPD. In particular, they should:

- Take ownership of their learning and development needs and develop a plan to indicate how they might meet these, in discussion with their employer, as appropriate
- Carry out a variety of development activities, both in accordance with this plan and in response to other opportunities which might arise
- Record their CPD activities
- Reflect on what they have learned or achieved through their CPD activities and record these reflections
- Evaluate their CPD activities against any objectives they have set and record this evaluation
- Review their learning and development plan regularly, following reflection and assessment of future needs
- Support the learning and development of others through activities such as mentoring and sharing professional expertise and knowledge

At Professional Review, all applicants will need to demonstrate how they meet their CPD obligations and show that they understand that this requires an ongoing commitment.

Sampling registrants' CPD records

The Licensees undertake annual random samples of professionally active registrants' CPD records and provide appropriate feedback, as described in the Engineering Council's Regulations for Registration (RfR).

Registrants who are not professionally active (eg retired or on a career break) may request exemption from a sample. The intention behind CPD sampling is not to police registrants, but to encourage a culture in which registrants will naturally engage in CPD and take ownership of their own learning and development.

Recording evidence of CPD undertaken is a requirement of professional registration. Professionally active registrants who persistently do not respond to or engage with requests for CPD records from a Licensee will be removed from the Engineering Council Register.

Professional and Ethical Behaviour

Statement of Ethical Principles

Engineering professionals work to enhance the wellbeing of society. In doing so they are required to maintain and promote high ethical standards and challenge unethical behaviour.

This Statement of Ethical Principles, published by the Engineering Council and the Royal Academy of Engineering, lists four fundamental principles to guide engineers and technicians in their professional life:

- Honesty and integrity
- Respect for life, law, the environment and public good
- Accuracy and rigour
- Leadership and communication

These express the beliefs and values of the profession and are explained in the Statement of Ethical Principles.

For more information please see: www.engc.org.uk/ethics

Guidance for Licensee Codes of Professional Conduct

All registrants are expected to observe the requirements of the Code of Professional Conduct (the Code) of the Licensee they have joined. This Code of Professional Conduct places a personal obligation on its members to act with integrity and in the public interest, in accordance with the Statement of Ethical Principles.

Each Licensee will have appropriate disciplinary processes in place to address breaches of their Code of Professional Conduct.

For more information please see: www.engc.org.uk/conduct

Guidance on Risk

This guidance, published by the Engineering Council, lists six principles to guide and motivate professional engineers and technicians in identifying, assessing, managing and communicating about risk.

For more information please see: www.engc.org.uk/risk

Guidance on Sustainability

This guidance, published by the Engineering Council, lists six principles to guide and motivate professional engineers and technicians when making decisions for clients, employers and society which affect sustainability.

For more information please see: www.engc.org.uk/sustainability

Guidance on Whistleblowing

This guidance, published by the Engineering Council, explains what whistleblowing is and the processes that engineers and technicians should follow when confronted with a potential whistleblowing situation:

For more information please see: www.engc.org.uk/whistleblowing

Guidance on Security

This guidance, published by the Engineering Council, lists six key principles to guide engineers and technicians in identifying, assessing, managing and communicating issues about security.

For more information please see: www.engc.org.uk/security

The Engineering Council reviews its guidance periodically and welcomes comments about this. Licensees may use this to assist them in developing guidance for their members.

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

International Activity

To ensure that professionally registered engineers' skills are recognised internationally, the Engineering Council is active within a number of multilateral mutual recognition agreements with other national engineering bodies. These agreements establish internationally benchmarked standards which allow signatory bodies to recognise each other's academic and professional qualifications, aiding mobility. In particular, the Engineering Council was a founder member of the Washington Accord and has subsequently worked with international partners to develop further agreements. The governance of these sits within the International Engineering Alliance (IEA).

The Engineering Council is a member of:

- The Agreement for International Engineering Technicians (AIET)
- The Dublin Accord (DA)
- The International Engineering Technologists Agreement (IETA)
- The International Professional Engineers Agreement (IPEA)
- The Sydney Accord (SA)
- The Washington Accord (WA)

The Engineering Council is a member of the European Network of Accreditation of Engineering Education (ENAEE), which authorises accreditation and quality assurance agencies to award the EUR-ACE® label to accredited engineering degree programmes. In addition, the Engineering Council works within the European Federation of National Engineering Associations (FEANI) to strengthen the voice of engineers at the European level.

For more information please see: www.engc.org.uk/international

Glossary

AAQA	**Approval and Accreditation of Qualifications and Apprenticeships**. One of the Standards which the **Engineering Council** publishes, along with **AHEP**, **ICT*Tech* Standard**, **RfR** and **UK-SPEC**. AQAA sets out the standards and learning outcomes which must be met for qualifications and apprenticeships to be **approved** for **registration** at all levels, ie **EngTech** or **ICT*Tech***, **IEng** and **CEng**. Previously known as AQAH (Approval of Qualifications and Apprenticeships Handbook). See: www.engc.org.uk/aaqa
Accredited / Accreditation	A process of peer review of a programme in a specified location against published learning outcomes and/or **competences**, 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: **Approved / Approval**.
AHEP	**Accreditation of Higher Education Programmes**. One of the Standards which the **Engineering Council** publishes, along with **AAQA**, the **ICT*Tech* Standard**, **RfR** 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
AIET	The **Agreement for International Engineering Technicians** is an agreement which works to ensure that professionally registered Engineering Technicians' **competence** is recognised internationally. See International Activity on page 48 or www.ieagreements.org/aiet
Approved / Approval	The process of peer reviewing a programme against published learning outcomes. This involves a review of a qualification or an apprenticeship programme by a number of **professionally registered** engineers. See also: **Accredited / Accreditation**
AQAH	See **AAQA**.

CDM Regulations	**Construction (Design and Management) Regulations 2015**, known as CDM Regulations or CDM 2015, are UK regulations governing construction projects of any type and size. CDM Regulations define responsibilities and place legal duties, enforceable by criminal law, on all parties involved in a construction project.
Chartered Engineer (CEng)	One of the professional titles available to individuals who meet the required standards of **competence** and **commitment**. See page 31 or www.engc.org.uk/ceng
Code of Professional Conduct	Every **Licensee** and **Professional Affiliate** which is licensed by the **Engineering Council** will have its own Code of Professional Conduct. One of the requirements of **professional registration** is demonstrating compliance with the appropriate organisation's Code. See page 47.
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 appropriate tasks to an effective standard. Achieving competence requires the right level of underpinning knowledge, understanding and skill, as well as a professional attitude. Demonstrating both competence and **commitment** is part of the requirement to become **professionally registered** with the **Engineering Council**.
CPD	**Continuing Professional Development.** The systematic acquisition of knowledge and skills, and the development of personal qualities, to maintain and enhance professional **competence** for current and future roles. All members of **Licensees** have an obligation to carry out CPD and to support the learning of others. See: www.engc.org.uk/cpd
Credit and Qualifications Framework for Wales	The Credit and Qualifications Framework for Wales covers learning from the very initial stages (Entry 1, 2 and 3) to the most advanced (Level 8). It is managed by a strategic operational partnership comprising the Welsh Government, Higher Education Funding Council for Wales (HEFCW) and Qualifications Wales.
Documented Evidence	The written and documented evidence of experience and qualifications which is submitted for a **Professional Review** when applying for **professional registration.**

Dublin Accord (DA)	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 **accredited** or **approved** Engineering Technician programmes. See International Activity on page 48 or www.ieagreements.org/dublin
Engineering Council	The UK regulatory body for the engineering profession. The Engineering Council sets and maintains internationally recognised standards of professional **competence** and ethics and holds the UK register of professional engineers and technicians.
Engineering Technician (EngTech)	One of the professional titles available to individuals who meet the required standards of **competence** and **commitment**. See page 19 or www.engc.org.uk/engtech
EQFM	The **European Quality Foundation Model** for continuous improvement.
EUR-ACE®	A European quality label for recognising **accredited** engineering degree programmes at Bachelors and Masters level. The **Engineering Council** is authorised to award the EUR-ACE® label. See: www.enaee.eu/eur-ace-system

FEANI	The **European Federation of National Engineering Associations**. The **Engineering Council** is the UK member of FEANI. See: www.feani.org
HASAW	**Health and Safety at Work**. Specifically, the 1974 Health and Safety at Work Act, the primary legislation covering occupational health and safety in the UK.
HNC	**Higher National Certificate**.
HND	**Higher National Diploma**.
ICT*Tech*	Information and Communications Technology Technician. One of the professional titles available to individuals who meet the required standards of **competence** and **commitment**. See: www.engc.org.uk/icttech
IEA	**International Engineering Alliance**. A partnership of international organisations across seven agreements that aim to facilitate the recognition of engineering educational qualifications and professional **competence**. See International Activity on page 48 or www.ieagreements.org
IETA	The **International Engineering Technologists Agreement** is an agreement which works to ensure that professionally registered engineering technologists' **competence** is recognised internationally. See International Activity on page 48 or www.ieagreements.org/ieta

Incorporated Engineer (IEng)	One of the professional titles available to individuals who meet the required standards of **competence** and **commitment**. See page 24 or www.engc.org.uk/ieng
Individual Assessment	The route to **professional registration** for individuals without recognised qualifications. See page 16. The other way to achieve professional registration is through **Recognised Qualifications**.
International Professional Engineers Agreement	The International Professional Engineers Agreement is an international agreement for the purposes of recognising substantial equivalence of professional **competence** in engineering. See International Activity on page 48 or www.ieagreements.org/ipea
ISO	The **International Organization for Standardization**. ISO publishes documents such as ISO 45001 the international standard for occupational health and safety and ISO 9000, the international quality standards on quality management and quality assurance.
Licensee	An engineering membership organisation which is licensed by the **Engineering Council** to assess applicants for **professional registration**. Some Licensees are also licensed to approve or accredit programmes of learning. Licensees are sometimes known informally as Professional Engineering Institutions or PEIs. For a full and current list of Licensees see: www.engc.org.uk/licensees
May	In the context of the requirements set out in the Standards, 'may' indicates there is permission to do something.
National Engineering Bodies	National engineering bodies responsible for regulation of the profession, such as the **Engineering Council**, or the national academy such as the **Royal Academy of Engineering**.
NVQ	**National Vocational Qualification**. NVQs are qualifications developed and **accredited** according to criteria set out nationally, and that are achieved through assessment and training. In Scotland, they are known as Scottish Vocational Qualification (**SVQ**). To achieve an NVQ, applicants must prove they have the ability to carry out their job to the required standard. NVQs are based on National Occupational Standards that describe the 'competencies' expected in any given job role.

PEI (Professional Engineering Institution)	See **Licensee**.
Post-nominal	Letters placed after a person's name which indicate that the person holds a certain position, academic degree, professional **accreditation**, office or honour. Examples of engineering post-nominals include **ICT*Tech*, EngTech**, **IEng** or **CEng**.
Professional Affiliate	An incorporated body or engineering institution which is closely associated with, but not licensed by, the **Engineering Council**. It **may** enter into an agreement with a **Licensee** to process its members for **professional registration**. For a full and current list of Professional Affiliates see: www.engc.org.uk/affiliates
Professional development	The process by which an individual gains professional **competence**. It **may** take place through formal and informal learning, and workplace training and experience.
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 (**ICT*Tech***). 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**.
Professional Review	A peer assessment process to decide whether an individual has met the requirements for **registration**. Professional Review is a holistic assessment of the applicant's **competence** and **commitment** against the relevant sections of **UK-SPEC**. See page 16–17.

Professional Review Interview	A peer assessment process to assess whether an individual has met the requirements for **professional registration**. It is a holistic assessment of the applicant's **competence** and **commitment** against the relevant sections of **UK-SPEC**. The Professional Review Interview is conducted by suitably qualified **registrants**, who make a recommendation whether the applicant has demonstrated the necessary competencies to achieve professional registration. See page 17.
Recognised Qualifications	Qualifications that are recognised as delivering the appropriate learning outcomes to develop an individual's **underpinning knowledge and understanding** for **professional registration**.
Registrant	An individual who holds a **professional registration** title such as **ICT*Tech***, **EngTech**, **IEng** or **CEng**.
Registration	See **Professional Registration**.
RfR	**Regulations for Registration**. One of the Standards which the **Engineering Council** publishes, along with **AAQA**, **AHEP**, **ICT*Tech* Standard** and **UK-SPEC**. **RfR** sets out the rules, for **Licensees**, on the process of awarding **professional registration** titles such as **ICT*Tech***, **EngTech**, **IEng** or **CEng**.
Royal Academy of Engineering (RAEng)	The UK's national academy for engineering that works to advance and promote excellence in engineering. RAEng provides analysis and policy support relating to business and education, invests in the UK's research base to underpin innovation, and works to improve public awareness and understanding of engineering. See: www.raeng.org.uk
Royal Charter	A formal document issued by the monarch granting rights and powers to an individual or an organisation.
SCQF	The **Scottish Credit and Qualifications Framework**. For more information see: www.scqf.org.uk
Shall	In the context of the requirements set out in the Standards, 'shall' indicates there is a requirement to do something (ie it is mandatory).
Should	In the context of the requirements set out in the Standards, 'should' indicates a recommendation to do something.
Statement of Ethical Principles	Published by the **Engineering Council** and the **Royal Academy of Engineering.** Engineering professionals **should** read the Statement of Ethical Principles in conjunction with their relevant **Code of Professional Conduct**. See page 47 or www.engc.org.uk/ethics

SVQ	Scottish Vocational Qualification. See also **NVQ**.
Sydney Accord (SA)	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 Activity on page 48 or www.ieagreements.org/sydney
UK-SPEC	**UK Standard for Professional Engineering Competence and Commitment**. This document, which sets out the **competence** and **commitment** requirements for **registration** as an **EngTech**, **IEng** or **CEng**. UK-SPEC is one of the Standards which the **Engineering Council** publishes, along with **AAQA**, **AHEP**, the **ICT*Tech* Standard** and **RfR**.
Underpinning Knowledge and Understanding	The knowledge and understanding of the principles of science, mathematics and engineering theory that are required to form the basis of engineering **competence** at a professional level.
Washington Accord (WA)	An international agreement among the bodies responsible for **accrediting** engineering degree (**CEng**) programmes. It establishes and benchmarks the standard for professional engineering education across those bodies, and recognises the equivalence of **accredited** engineering progrogrammes.' See International Activity on page 48 or www.ieagreements.org/washington

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APPENDIX F

Disciplinary Procedure Guidance

"The primary purpose of disciplinary proceedings is not to punish, but to protect the public, to maintain public confidence in the integrity of the profession, and to uphold proper standards of behaviour."
Lord Collins, R (on the application of Coke-Wallis) v ICAEW, Supreme Court, 2011.

1 Introduction

An essential function of a professional institution is self-regulation: the setting and regulation by members of appropriate standards of professional competence and conduct.

The Engineering Council has a duty through its Charter (Article 4.c.) to "*provide guidance on the codes of conduct and disciplinary procedures of Licensed Members and Professional Affiliates*". Requirements to prescribe standards and procedures to the satisfaction of The Engineering Council Board are a condition for the issue of a Licence (Bye-law 15) or approval of Professional Affiliate status (Bye-law 24).

Except in a few specialist disciplines, regulation is voluntary, non-statutory and part of the membership contract between the Institution and the member. Disciplinary procedure is therefore not constrained by legal provisions or precedent related to statutory tribunals except insofar as such provisions may have been imported into the contract.

2 Scope

This document is primarily aimed at the handling of complaints against Engineering Council Registrants received by their licensed institutions but may well be applicable to non-Registrant members. It is also applicable if the Institution becomes aware that a Registrant has been convicted of, or accepted a caution for, a relevant criminal offence.

Guidance for institution Codes of Professional Conduct is published separately.

3 Principles of a disciplinary procedure

- Whether conducted in public or in private, the procedure should be clear, open, fair, unbiased and proportionate; essentially, it should accord with the principles of natural justice;
- All persons involved should respect the confidentiality of the proceedings;
- No person should participate in decision-making in more than one stage of the procedure in any particular case;
- While the procedure is the responsibility of the Institution governing body, it should delegate authority in order to comply with the first and third principles above;

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- Judgement by peers. Staff may provide administrative and secretarial support and procedural advice but should not influence or participate in the decision-making process, even if they are members of the Institution;

- No presumption of liability until breach of Code of Professional Conduct admitted or proved. Decisions should be based on the appropriate standard of proof (see 5.5 below).

- Proved breaches of the Code of Professional Conduct should attract sanctions commensurate with the seriousness of the breach;

- More comprehensive processes may be required where there is a 'licence to practise' issue (see 5.3 below), and in particular if the Institution is exercising a statutory regulatory function;

- Training should be given to those involved in assessing and adjudicating complaints;

- Clear timescales should be established for each stage of the procedure and progress should be actively monitored by a senior staff member;

- A written record should be made of each stage of the proceedings. Records should be maintained for a defined minimum period.

4 Authority

The Code of Professional Conduct and Disciplinary Procedure must be authorised by including their key requirements and features in the Institution's governing document (Bye-laws or Articles of Association). The style and degree of detail will be a matter for each institution and its lawyers, but the minimum recommended content is as follows:

- That the governing body (Council or Board) shall publish in Regulations a Code of Professional Conduct and a Disciplinary Procedure for dealing with alleged breaches of the Code;

- That in doing so the governing body shall have due regard to the related Guidance published by the Engineering Council or a successor regulatory body;

- That members shall uphold the reputation of the Institution and the profession and safeguard the public interest; observe the provisions of the governing document and supporting rules and regulations; comply with the Code of Professional Conduct; and cooperate with the Disciplinary Procedure;

- That the governing body shall have the power to expel or impose other sanctions on a member proved to have breached the Code of Professional Conduct;

- That a member who resigns, or whose membership lapses through non-payment of fees or subscriptions, after a complaint against him has been lodged with the Institution, shall be deemed to remain in membership until completion of the disciplinary process.

The following requirements could be included either in the governing document or within an introduction to the relevant Regulation:

- That the rules governing the Disciplinary Procedure shall cover preliminary investigations, disciplinary hearings, burden of proof, sanctions, appeals and publication of outcomes;

- That all stages of the procedure shall be conducted, and decisions reached, in accordance with natural justice;

5 Components of the Procedure

5.1 **A Code of Professional Conduct** should clearly set out the expectations in respect of professional competence and behaviour in such a way that any legitimate complaint against a member can be framed as an alleged breach of a provision of the code. It should be communicated to and demonstrably accepted by members. They should also be made aware of the disciplinary and appeals procedure. The Code should be reviewed at appropriate intervals and at least biennially.

5.2 Once a complaint has been received **a Preliminary Investigation** will decide whether or not there is a case to answer. Such investigation, which is an administrative, not judicial, process, can be conducted by a small panel, or even one nominated member or employee of the Institution. The investigation should determine first, whether the alleged misconduct would, if admitted or proved, lie within the ambit, or jurisdiction, of the Disciplinary Panel; and secondly, whether there is, or could be, enough evidence to justify an inquiry. If so, evidence should be assembled to assess the validity of the complaint by the Disciplinary Panel. The subject of the complaint should be informed and kept informed of developments; evidence submitted by the complainant should be disclosed to the subject and vice versa.

A decision of 'no case to answer' should result in the dismissal of the complaint. The subject and the complainant should be informed of the reason for the decision (lack of jurisdiction or insufficiency of evidence). Records of the complaint, including the evidence, should not be maintained beyond the time limit for any appeal by the complainant against the decision. A finding that there was a 'case to answer' should result in a referral to a Disciplinary Panel. The 'case to answer' should be framed in detailed and particular terms, clearly related to the Code of Professional Conduct, such that the subject can understand the allegation against him. A minor case to answer should not be summarily or informally dealt with within this stage of the procedure.

The Preliminary Investigation should determine whether any criminal or civil court proceedings related to the alleged misconduct are likely or under way. If so, then the disciplinary hearing should not proceed until court proceedings, including any appeal, are complete, since the court proceedings might otherwise be prejudiced. Where the subject has been convicted of a criminal offence or found liable in a civil court, the disciplinary hearing must separately determine whether the subject's conduct (including, but not limited to, that proven in court) amounts to a breach of the code of conduct. An adverse court verdict should not in itself form the basis of a complaint.

5.3 **The disciplinary hearing** should be conducted by a **Disciplinary Panel** of not fewer than three senior, experienced and trained members. The Panel should have a Chairman who reports directly to the governing body. The Panel acts as an impartial assessor of the complaint. It also decides sanctions from a list prescribed in Regulations and advises the governing body of its finding.

Panel members should be sufficiently independent of the Institution to avoid any real or perceived bias or conflict of interest, and so should never include current members of its governing body (trustees/directors) or employees. A person who has participated in a Preliminary Investigation should not act as a member of the Panel for the same case. In more serious cases, including where a 'licence to practise' or potential loss of livelihood may be involved, or if the subject is an officer or senior member of the Institution, one or more lay members (i.e. persons not from the same discipline or profession as the Institution Panel members) should be included on the Panel. Consideration should be given to inviting a legal adviser to attend to advise the parties on the legal process but not to vote on the decision, particularly for extended disciplinary hearings.

5.4 **The disciplinary process** involves the collection, examination and clarification of evidence. Prejudicial material that is irrelevant to the 'case to answer' should not be presented to the Panel. The complainant and the subject should have timely access to evidence and responses. Where the allegation relates to matter of a specialised nature the Panel should consider engaging an independent expert witness. The Panel may make a decision after examining the written evidence or may decide to hold an extended hearing to which all parties are invited.

The parties to the case are the presenter of the complaint (on behalf of the Institution) and the subject. For relatively straightforward cases the complainant may be permitted to present the complaint in person. For more serious or complex cases the presenter would normally be a person appointed by the Institution for the purpose. However, where the Panel is acting under statutory authority, or where the complaint is of such a nature that the Panel decides that it should be enquired into in the public interest whether or not the complainant wishes to pursue it, the Institution should employ a lawyer to present the complaint. The reason is that there needs to be a clear division between the person presenting and the persons hearing the complaint so that there can be no suggestion of conflict of interest.

Parties involved should be entitled to invite to the hearing either:

- a lawyer, whom they may pay to represent them, including to speak on their behalf; or
- a non-lawyer "McKenzie Friend"[1], who may support, quietly advise and take notes for them but may not speak on their behalf.

Either party should be required to give reasonable advance notice if they intend to be legally represented, so that the other party can arrange legal representation if considered necessary.

A complainant who is not presenting in person should be invited or permitted to attend the proceedings (accompanied if desired by a 'friend') and may be called as a witness, but should have no automatic right of audience.

Consideration should be given to adjourning the hearing if the subject is unable to be present or represented as it is in the interests of all parties that they attend wherever possible to present their cases. Even if the subject fails to appear on the day, a brief adjournment should be considered to allow enquiries to be made.

The hearings should be conducted with transparent fairness. They comprise a statement by the presenter of the complaint (or his representative) and evidence to support it (with any cross-examination of witnesses) followed by a rebuttal by the subject (or his representative) with evidence (which is also open to cross-examination). Additionally, evidence may include written statements, at the Panel's discretion. Neither party should be 'ambushed' with new evidence which has not been disclosed in advance, and Panel members should take account only of evidence which is presented, or elicited in cross-examination, during the hearing. Unlike in a court, however, hearsay evidence may be admissible.

A member who resigns after a complaint has been made, or whose membership would be terminated for non-payment of subscriptions, should be deemed to remain in membership until the disciplinary process has reached its decision. If this decision is that the person be expelled from membership, his deemed membership will allow that to be effected and shown on the record should he ever seek to re-join the same or another institution. This should be stated in the Bye-laws or Articles of Association to which a member should assent at the time of joining the Institution.

5.5 The **burden of proof** is normally the civil standard, the 'balance of probabilities'. Judicial guidance indicates that the standard of proof should be appropriate to the gravity of the matter and

[1] As defined at http://courtwithoutalawyer.co.uk/mckenzie-friends.html

the likely consequences if the alleged breach is upheld. Where serious misconduct, rather than lack of competence, is alleged, or where loss of livelihood would result, the criminal standard, 'beyond reasonable doubt' is likely to be appropriate. There are no other 'in between' standards. The Panel should make clear to the parties which standard is being applied to a particular case. However, the standard of proof applies only to decisions relating to disputed facts. Whether or to what extent the proven facts amount to professional misconduct or fitness to practise is for the Panel to judge.

5.6 If the complaint is admitted or upheld, the Panel determines which section of the Bylaws, Regulations or Code of Professional Conduct has been breached, hears any mitigation and decides the **sanction**. Sanctions may be: expulsion from membership; withdrawal of the practising certificate; suspension of membership or membership privileges (which might nevertheless permit access to facilities for maintenance of CPD or retraining during suspension); removal of registration without expulsion from membership (again to allow for access to CPD or retraining); reprimand accompanied by advice on future actions or retraining. Fines are not appropriate for professional bodies, since sanctions do not represent punishment. Similarly, terms such as 'accused', 'offence', 'guilty', 'verdict' and 'penalty' should be avoided. However, an order for costs could in some circumstances (and if provided for in Regulations) be appropriate, for example if the Institution had found it necessary to engage a lawyer because the subject had given notice of his intention to do so.

5.7 **An appeal process** must exist. It must be available to the complainant following the preliminary stage and to the subject following the disciplinary hearing stage. A reasonable time limit for lodging an appeal should be specified in Regulations. The appeal process consists of two parts: leave (permission) to appeal and, if granted, hearing by an Appeal Panel. The Appeal should be considered by persons who have had no contact with the case beforehand. The Institution might decide to have a legal advisor in attendance for either or both parts of the process.

Leave (Permission) to appeal is not granted automatically and one or more specific grounds should be identified. The normally recognised grounds for appeal are:

- Jurisdiction (whether the alleged misconduct would be within the scope of the provisions of the Bylaws or the code of conduct);
- Procedure (was not followed);
- Perversity (the decision was perverse in the light of the evidence);
- New evidence (which could not reasonably have been produced at the original hearing) and additionally for an appeal against a Disciplinary Panel decision:
- Proportionality (the sanction was disproportionate to the gravity of the breach)

The argument under each ground must stand on its own. Leave to appeal may be granted on two or even more grounds, but should not be granted in response to an accumulation of individually insufficient arguments under two or more grounds.

An appeal against 'no case to answer' should be considered by one person independent of the Institution. In these circumstances only, leave to appeal and the appeal itself may be considered as a single process and be conducted by the same person. If there are valid grounds for appeal he should review the material presented to the Preliminary Investigation, the record of its decision and any additional evidence admitted. If the independent reviewer decides that there is a 'case to answer' the Institution should refer the case to a Disciplinary Panel.

Leave to appeal against a Disciplinary Panel decision should be considered by a panel of three members. If leave to appeal is granted the Institution should with minimum delay convene an **Appeal Panel** comprising at least three senior persons (again, not current members of its govern-

ing body or employees) including one lay person independent of the Institution. It should be as independent of the governing body as is practical bearing in mind the need to understand and weigh specialist subject matter. The appeal hearing should follow the same principles as the disciplinary hearing, modified to suit the accepted grounds for appeal; a full re-hearing is not essential in all circumstances.

If the appeal is upheld the Appeal Panel may reverse the decision of the Disciplinary Panel or uphold its decision but reduce the sanction.

5.8 **Appeal to the Engineering Council** is only available if a member, in losing his membership as a result of disciplinary action by the Institution, also loses his registration and the Institution's appeals process has been exhausted. This appeal is carried out under the relevant Engineering Council Regulation. Complaints not amounting to an appeal to the Engineering Council in respect of other matters may result in the Engineering Council discussing the case with the Institution concerned only to confirm that the procedure approved as part of the licensing process had been followed.

5.9 While the **governing body** should be notified of the progress and outcome of a disciplinary case it should not be invited to ratify the finding and sanction, since it has not heard the evidence. If the governing body chooses to discuss a case, any person who is or has been involved in the process should absent himself.

5.10 The Institution should reserve in Regulations the **right to publish details** of established breaches of the Code of Professional Conduct, which will in the case of a Registrant include informing the Engineering Council. This might in fairness extend to publishing, at the request of the subject, notification that a complaint has not been upheld. The Institution must inform the Engineering Council of any expulsion, whether or not the individual is registered by the Institution.

Where a complaint is upheld and the appeal process exhausted, the Engineering Council is responsible for **informing any other institutions** of which the Registrant is known to be a member, so that they may decide what action should be taken. This is particularly important if the person is registered through an institution other than that which has carried out the disciplinary procedure.

5.11 If an individual who is asked to serve on any panel has a **conflict of interest** in relation to any part of the allegations, or has a connection with the subject or the complainant which creates a real danger of bias, or which could cause others to think it could influence his decision, he should declare it and disqualify himself from participating.

6 Records of Proceedings

An impartial record should be made of every preliminary investigation and of each hearing within the disciplinary and appeals process. The record should comprise:

- A copy of all written evidence submitted;
- A summary of the oral evidence in support of the alleged breach and in rebuttal or mitigation, including any salient points elicited in cross-examination;
- A summary of the Panel's reasons for its decision.

Summaries should be in a form similar to minutes of a meeting: they would not be verbatim records but should contain sufficient detail for a reviewer to understand the issues and to be able to judge whether the proceedings had been fairly and properly conducted. Summaries of hearings should not be written by a person who has played any other part in any stage of the proceedings, and should be approved by the panel chairman.

The summary of the Panel's reasons for its decision should be disclosed to both parties with the notification of the decision. Any further disclosure, for example in the event of an appeal, should be made equally (in both timing and content) to both parties.

The Institution should specify minimum periods following completion of a case (or expiry of any period of notice to appeal) for maintenance of written evidence and of summaries. This could be varied depending on the gravity of the matter, but an overall minimum of six [6] years is suggested. Where a member has been expelled from membership and/or registration, the summary should be kept beyond any minimum period specified for re-application. Written (and, if taken, audio) evidence should not normally be kept beyond expiry of any period of notice to appeal.

7 Summary of key elements of the procedure

- A Code of Professional Conduct (which should be reviewed regularly) needs to be communicated to and accepted by members.
- The governing body delegates authority;
- Preliminary investigation;
- Disciplinary hearing (independent panel, consider extended hearings in more serious or complex cases, appropriate burden of proof, sanction);
- Appeal (grounds should be stated, separate panel, Engineering Council role is limited);
- Production and maintenance of records of proceedings;
- Publication of outcome.

8 Natural Justice and the Human Rights Act

The procedure outlined accords with the currently accepted principles of natural justice. It is also considered to be consistent with many of the principles of the "right to a fair trial" contained in Article 6 of the European Convention on Human Rights and given further effect in English law by the Human Rights Act 1998 (HRA). The Engineering Council's view, supported by specialist legal advice, is that HRA generally does not apply to this procedure because institution membership and Engineering Council registration are voluntary and an institution is not a "public authority" or carrying out the functions of a public nature as defined in HRA. Any institution which is undertaking a statutory regulation role is advised to take specialist legal advice to ensure that its procedures are fully HRA compliant. Since the interpretation of HRA and other legislation is continually developing, institutions may consider it prudent to take legal advice from time to time on their procedures.

References

- Guidelines for Institutions' Codes of Conduct (Engineering Council: www.engc.org.uk)
- "Role of the Regulator and Prosecuting Body in Professional Disciplinary Proceedings" -Kenneth Hamer, Henderson Chambers, 2009
  http://www.hendersonchambers.co.uk/wp-content/uploads/pdf/role-of-the-regulator-and-prosecuting-body-2009.pdf

Notes

- Where this guidance uses "should", Institutions will wish to consider where it is appropriate to use "must" or "shall" when drafting Bye-laws or Regulations.
- A flowchart of a model disciplinary procedure is at the Annex, but a flowchart should not be used as a substitute for a written regulation or set of rules.

Annex – Model Disciplinary Procedure