

Competence statements - AAQA first edition

Taken from the Approval and Accreditation of Qualifications and Apprenticeships (AAQA), first edition

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These competence statements are taken from AAQA, which forms part of the Standard used by the UK engineering profession to assess the competence and commitment of individual engineers and technicians for professional registration. This Standard was developed collaboratively in consultation with engineers representing the breadth of the profession, from industry, academia and many different disciplines and specialisms.

To download the full AAQA document for free please visit the Engineering Council website: www.engc.org.uk/aaqa

About the Engineering Council

The Engineering Council is the UK's regulatory body for the engineering profession. It sets the Standards which need to be met for an individual to become professionally registered.

The Engineering Council licenses engineering institutions (Licensees) to assess individuals for professional registration and assess programmes of learning for approval or accreditation. Licensees carry these tasks out on the Engineering Council's behalf.

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.

AAQA replaces the previous Approval of Qualifications and Apprenticeships Handbook (AQAH). Its scope is broader, enabling approval and accreditation of a wider variety of programmes, including those designed to develop engineering competence.

The competence statements included under EngTech, IEng and CEng are taken from UK SPEC 4th edition. The intermediate competences have been developed as part of AAQA to aid progression.

A. Knowledge and understanding					
	EngTech 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.	IEng 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.	CEng Chartered Engineers shall use a combination of general and specialist engineering knowledge and understanding to optimise the application of advanced and complex systems. This competence is about the ability to understand underpinning technical principles relevant to the applicant's area of practice and applying them to develop technical solutions. This could involve technical solutions for novel problems with significant technical complexity. This may involve the integration of a range of technologies and consideration of other factors. This competence requires that an applicant is maintaining and developing their knowledge in their field of practice and not just that required for specific tasks.		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
A1	Review and select appropriate techniques, procedures and methods to undertake tasks	Propose numerous suitable techniques, procedures and methods to undertake tasks	Maintain a sound theoretical approach to the application of technology in engineering practice	Maintain and extend a sound theoretical approach to the application of technology in engineering practice	Maintain and extend a sound theoretical approach to enable them to develop their particular role
A2	Use appropriate scientific, technical or engineering principles.	Select appropriate scientific, technical or engineering principles in specific situations.	Select appropriate scientific, technical or engineering concepts or ideas in specific situations.	Use a sound evidence-based approach to problem-solving and contribute to continuous improvement.	Develop technological solutions to unusual or challenging problems, using their knowledge and understanding and/or dealing with complex technical issues or situations with significant levels of risk.

AAQA table of competences (continued)

B. Design, development and solving engineering problems

	<p>EngTech Engineering Technicians shall contribute to the design, development, manufacture, construction, commissioning, decommissioning, operation or maintenance of products, equipment, processes, systems or services. This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant's role.</p>	<p>IEng Incorporated Engineers shall apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and recycle engineering processes, systems, services and products. This competence is about the ability to identify appropriate methods and approaches to use to undertake a task within their area of practice and to make a significant contribution to the development of a design or process or the maintenance of operations.</p>	<p>CEng Chartered Engineers shall apply appropriate theoretical and practical methods to the analysis and solution of engineering problems. This competence is about the ability to apply engineering knowledge effectively and efficiently to the individual tasks which need to be undertaken in the applicant's role.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
B1	Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions	Identify and evaluate causes and propose solutions to engineering problems	Identify and evaluate causes and select techniques, procedures and methods to solve engineering problems	Identify, review and select techniques, procedures and methods to undertake engineering tasks	Take an active role in the identification and definition of project requirements, problems and opportunities
B2	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact.	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety, security, environmental impact and decommissioning	Identify, organise and use resources effectively to complete tasks, with consideration for through-life costs, quality, technology development, safety, security, maintainability, environmental impact and decommissioning	Contribute to the design and development of engineering solutions	Identify the appropriate investigations and research needed to undertake the design, development and analysis required to complete an engineering task and conduct these activities effectively
B3		Contribute to the design process.	Propose possible design solutions.	Implement design solutions for equipment or processes and contribute to their evaluation.	Implement engineering tasks and evaluate the effectiveness of engineering solutions.

AAQA table of competences (continued)

C. Responsibility, management and leadership

	<p>EngTech Engineering Technicians shall accept and exercise personal responsibility. This competence is about the ability to plan and manage the applicant's own work effectively and efficiently. It is also about the ability to consider and identify improvements to maintain quality in their work.</p>	<p>IEng Incorporated Engineers shall provide technical and commercial management. This competence is about the ability to plan the applicant's own work and manage or specify the work of others effectively, efficiently and in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Incorporated Engineers are working within complex and varied working relationships they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.</p>	<p>CEng Chartered Engineers shall demonstrate technical and commercial leadership. This competence is about the ability to plan the applicant's own work and manage or specify the work of others effectively and efficiently in a way which provides leadership at an appropriate level, whether technical or commercial. Leadership is not necessarily about having a formal line management role. In matrix management and other types of organisational structure, where Chartered Engineers are working within complex and varied working relationships, they will provide leadership to achieve objectives. This competence is also about the ability to consider and identify improvements to quality.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
C1	Work reliably and effectively without close supervision, to the appropriate codes of practice	Work reliably and effectively without supervision, to the appropriate codes of practice	Assist in the planning for effective project implementation	Plan the work and resources needed to enable effective implementation of engineering tasks and projects	Plan the work and resources needed to enable effective implementation of a significant engineering task or project
C2	Accept responsibility for the work of themselves or others	Manage tasks and people	Manage tasks, people and resources	Manage (organise, direct and control) programme or schedule, budget and resource elements of engineering tasks or projects	Manage (organise, direct and control) programme or schedule, budget and resource elements of a significant engineering task or project
C3	Accept, allocate and supervise technical and other tasks.	Manage teams to meet technical and managerial needs	Manage teams to meet changing technical and managerial needs	Manage teams or the input of others into own work and assist others to meet changing technical and management needs	Lead teams or technical specialisms and assist others to meet changing technical and managerial needs
C4		Identify where continuous quality improvement has been used.	Contribute proactively to continuous quality improvement.	Take an active role in continuous quality improvement.	Bring about continuous quality improvement and promote best practice.

AAQA table of competences (continued)

D. Communication and interpersonal skills

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

E. Personal and professional commitment

	<p>EngTech Engineering Technicians shall demonstrate commitment to an appropriate code of professional conduct, recognising obligations to society, the profession and the environment. This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Engineering Technician should set a standard and example to others with regard to professionalism.</p>	<p>IEng Incorporated Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment. This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. An Incorporated Engineer should set a standard and example to others with regard to professionalism.</p>	<p>CEng Chartered Engineers shall demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment. This competence is about ensuring that the applicant is acting in a professional manner in their work and in their dealings with others. A Chartered Engineer should set a standard and example to others with regard to professionalism.</p>		
	EngTech / ICTTech	Intermediate; exceeds EngTech threshold	Intermediate; further development required for IEng	IEng	CEng
E1	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct	Understand and comply with relevant codes of conduct
E2	Understand the safety implications of their role and can apply safe systems of work	Understand the safety implications of their role and can apply and improve safe systems of work	Understand the safety implications of their role and can manage, apply and improve safe systems of work	Understand the safety implications of their role and can manage, apply and improve safe systems of work	Understand the safety implications of their role and manage, apply and improve safe systems of work
E3	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work	Understand the principles of sustainable development and apply them in their work
E4	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice	Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice
E5	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.	Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.