Defining characteristics and Learning outcomes – AAQA first edition and AHEP fourth edition

Taken from the Approval and Accreditation of Qualifications and Apprenticeships (AAQA), first edition and the Accreditation of Higher Education Programmes (AHEP) fourth edition

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These learning outcomes are taken from AAQA and AHEP, 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 and AHEP documents for free please visit the Engineering Council website:
www.engc.org.uk/aaqa
www.engc.org.uk/ahep

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 behalf of the Engineering Council.

It operates under a Royal Charter and is governed by a Board that represents UK engineering institutions as well as individuals from industries and sectors with an interest in the regulation of the profession.

Defining characteristics of approved and accredited programmes

National Certificates/ Diplomas and equivalent qualifications accredited or approved as fully meeting the academic requirement for EngTech registration	**Higher National Certificate and equivalent qualifications accredited as meeting the educational requirements for progression towards IEng registration (further learning to Bachelors level will be required)**	**Foundation degrees and equivalent qualifications accredited as partially meeting the educational requirement for IEng registration (further learning to Bachelors level will be required)**	**Bachelors degrees and Bachelors (Honours) degrees accredited for IEng registration (including Top-up degrees)**	**Bachelors (Honours) degrees accredited as partially meeting the educational requirement for CEng registration (further learning to Masters level will be required)**	**Masters degrees other than the Integrated Masters (MEng) (accredited as further learning to Masters level, partially meeting the educational requirement for CEng)**	**Integrated Masters (MEng) degrees accredited for CEng registration**
ISCED: Level 3 **EQF: Level 4**	**ISCED: Level 5** **EQF: Level 4/5**	**ISCED: Level 5** **EQF: Level 5**	**ISCED: Level 6** **EQF: Level 6**	**ISCED: Level 6** **EQF: Level 6**	**ISCED: Level 7** **EQF: Level 7**	**ISCED: Level 7** **EQF: Level 7**
National Certificates/ Diplomas or equivalent qualifications accredited for the purpose of EngTech registration will have an emphasis on the practical application of current and developing technology.	Higher National Certificates or equivalent qualifications accredited for the purpose of progression towards IEng registration will have an emphasis on the practical application of current and developing technology.	Foundation degrees or equivalent qualifications accredited for the purpose of IEng registration will have an emphasis on the applications of current and developing technology.	Bachelors degrees and Bachelors (Honours) degrees accredited for the purpose of IEng registration will have an emphasis on the applications of current and developing technology.	Bachelors (Honours) degrees accredited for the purpose of CEng registration will have an emphasis on developing solutions to engineering problems using new or existing technologies, through innovation, creativity and change.	Masters Degrees other than the Integrated Masters accredited as further learning to Masters level for the purpose of CEng registration vary in nature. Some offer the chance to study in greater depth particular aspects or applications of a broader discipline in which the graduate holds an Honours degree at Bachelors level. Others bring together different engineering disciplines or subdisciplines in the study of a particular topic, or engineering application.	Integrated Masters degrees (often denoted MEng) accredited for the purpose of CEng registration will have an emphasis on developing solutions to problems using new or existing technologies, through innovation, creativity and change. The Integrated Masters will go beyond the outcomes of accredited Bachelors (Honours) degrees to provide a greater range and depth of specialist knowledge, within an authentic environment, as well as a broader and more general academic base.

ISCED: Level 3 EQF: Level 4	ISCED: Level 5 EQF: Level 4/5	ISCED: Level 5 EQF: Level 5	ISCED: Level 6 EQF: Level 6	ISCED: Level 6 EQF: Level 6	ISCED: Level 7 EQF: Level 7	ISCED: Level 7 EQF: Level 7
An individual who has completed a National Certificate/Diploma or equivalent qualification or apprenticeship must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve well-defined programmes of work and associated problems using established principles and techniques.	An individual who has completed a Higher National Certificate or equivalent qualification or apprenticeship must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve well-defined programmes of work and associated problems using established principles and techniques.	An individual who has completed a Foundation degree or equivalent qualification must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve broadly-defined problems using established principles and techniques. With an appreciation of professional engineering practice and ethics, graduates will be able to apply their knowledge and skills to new situations.	Graduates from Bachelors degrees or Bachelors (Honours) degrees must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve broadly-defined problems using established principles and techniques. Some of the knowledge will be informed by current developments in the subject of study. With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design and deliver products, systems and processes to meet defined needs using current technology.	Graduates from a Bachelors (Honours) degree must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Some of the knowledge will be at the forefront of the particular subject of study. Graduates will be able to select and apply quantitative and computational analysis techniques, recognising the limitations of the methods employed. With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design and deliver new products or services to meet defined needs using new or existing technologies.	These programmes should provide a foundation for leadership and innovative engineering practice. Graduates from a Masters Degree other than the Integrated Masters must achieve the prescribed learning outcomes and will possess a coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Much of the knowledge will be at the forefront of the particular subject of study. Graduates will be able to select and apply quantitative and computational analysis techniques in the absence of complete data, discussing the limitations of the methods employed. With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design, deliver and evaluate innovative new products or services to meet defined needs using new or existing technologies.	These programmes should provide a foundation for leadership and innovative engineering practice. Graduates from an Integrated Masters degree must achieve the prescribed learning outcomes and will possess a broad and coherent body of knowledge including mathematics, natural science and engineering principles, and a proven ability to apply that knowledge to analyse and solve complex problems. Much of the knowledge will be at the forefront of the particular subject of study. Graduates will be able to select and apply quantitative and computational analysis techniques in the absence of complete data, discussing the limitations of the methods employed. With an appreciation of professional engineering practice and ethics, graduates will be commercially aware and able to apply their knowledge and skills to design, deliver and evaluate innovative new products or services to meet defined needs using new or existing technologies.

Learning Outcomes – AAQA first edition and AHEP fourth edition

The table below presents the learning outcomes for AHEP 4 and AAQA with the addition of a note to indicate the level at which each learning outcome must be demonstrated. Note that when consideration is given to accreditation of programmes of further learning no consideration is needed of any 'learning outcome achieved at previous level of study' as accreditation will only apply for individuals who have completed a suitably accredited programme for which the programme serves as further learning.

Notes on learning outcomes

1. **Well-defined problems** involve several factors, but with few of these exerting conflicting constraints, and can be solved through the standardised application of engineering science.

2. **Broadly-defined problems** involve a variety of factors which may impose conflicting constraints, but can be solved by the application of engineering science and well-proven analysis techniques.

3. **Complex problems** have no obvious solution and may involve wide-ranging or conflicting technical issues and/or user needs that can be addressed through creativity and the resourceful application of engineering science.

4. These learning outcomes are minimum threshold standards and should be interpreted in the context of a particular disciplinary or multidisciplinary engineering practice, and the level of study.

5. An individual who has completed an approved or accredited programme must meet all of the identified learning outcomes, however student learning hours are likely to vary between the five key areas of learning.

6. It is recognised that an approved or accredited programme may develop learning outcome(s) beyond the threshold level, including where learning outcomes are met at the previous level of study, however such additional learning is not prescribed or required for academic accreditation.

7. The learning outcome level required to meet the required programme outcome/registration level is not necessarily that which corresponds with the final year/stage of the programme. Rather, it provides one indication of the earliest programme stage at which the required programme outcome could be met. (As extreme examples, Security (T10-M10) and Lifelong Learning (T18-M18) are defined identically for all registration levels, which implies that they could in principle be met in the first year of an undergraduate programme. These are however AHEP 4 minimum threshold standards, and HEIs may feel that the integrity of their academic programmes would require a more sophisticated approach to security or lifelong learning to be adopted for an MEng than for an EngTech or BEng programme.)

8. The learning outcomes in this document may be a useful reference point when assessing the knowledge and understanding of an individual who does not hold an accredited degree (for example those individuals following sector specific apprenticeships, in-company training programmes, IPD Schemes, etc.).

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

Area of learning	Engineering Technician (EngTech)		Incorporated Engineer (IEng)			Chartered Engineer (CEng)		
	National Certificates and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for EngTech registration (EngTech)	Higher National Certificates and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for EngTech registration and partially meeting the academic requirement for IEng registration (EngTech / Partial IEng)	Foundation degrees, Higher National Diplomas and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for EngTech registration and partially meeting the academic requirement for IEng registration (Partial IEng)	Bachelors Top-up Degrees and equivalent qualifications and apprenticeships accredited or approved as meeting the requirement for further learning for IEng registration (IEng Further Learning)	Bachelors degrees and Bachelors (Honours) and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for IEng registration (IEng)	Bachelors (Honours) degrees and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for IEng registration and partially meeting the academic requirement for CEng registration (Partial CEng)	Masters degrees other than the Integrated Masters and Doctoral programmes and equivalent qualifications and apprenticeships accredited or approved as meeting the requirement for further learning for CEng registration (CEng Further Learning)	Integrated Masters degrees and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academic requirement for CEng registration (CEng)
On successful completion of an accredited or approved programme, an individual will be able to:								
Science and mathematics The study of engineering requires a substantial grounding in engineering principles, science and mathematics commensurate with the level of study.								
Science, mathematics and engineering principles	**T1**. Apply knowledge of mathematics, statistics, natural science and engineering principles to well-defined problems. (ISCED L3/ EQF L4)	**H1.** Apply knowledge of mathematics, statistics, natural science and engineering principles to well-defined problems. (ISCED L3/ EQF L4)	**F1.** Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. (ISCED L5/EQF L5)	**B1.** Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study. (ISCED L6/EQF L6)	**B1.** Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly-defined problems. Some of the knowledge will be informed by current developments in the subject of study. (ISCED L6/EQF L6)	**C1.** Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study. (ISCED L6/EQF L6)	**M1.** Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. (ISCED L7/EQF L7)	**M1.** Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. (ISCED L7/EQF L7)

Area of learning	National Certificates (continued)	Higher National Certificates (continued)	Foundation degrees (continued)	Bachelors Top-up (continued)	Bachelors degrees (continued)	Bachelors (Honours) (continued)	Masters degrees (continued)	Integrated Masters (continued)
On successful completion of an accredited or approved programme, an individual will be able to:								
Engineering analysis Engineering analysis involves the application of engineering concepts and tools to analyse, model and solve problems. At higher levels of study engineers will work with information that may be uncertain or incomplete.								
Problem analysis	**T2.** Analyse well-defined problems reaching substantiated conclusions. (ISCED L3/ EQF L4)	**H2.** Analyse well-defined problems reaching substantiated conclusions. (ISCED L3/ EQF L4)	**F2.** Analyse broadly-defined problems reaching substantiated conclusions. (ISCED L5/ EQF L4/5)	**B2.** Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	**B2.** Analyse broadly-defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	**C2.** Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	**M2.** Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)	**M2.** Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)
Analytical tools and techniques	**T3.** Use appropriate computational and analytical techniques to solve well-defined problems. (ISCED L3/ EQF L4)	**H3.** Use appropriate computational and analytical techniques to solve well-defined problems recognising the limitations of the techniques employed. (ISCED L5/ EQF L4/5)	**F3.** Use appropriate computational and analytical techniques to model broadly-defined problems. (ISCED L5/EQF L5)	**B3.** Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	**B3.** Select and apply appropriate computational and analytical techniques to model broadly-defined problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	**C3.** Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	**M3.** Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)	**M3.** Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)
Technical literature	**T4.** Select and use technical literature and other sources of information to address well-defined problems. (ISCED L3/ EQF L4)	**H4.** Select and use technical literature and other sources of information to address well-defined problems. (ISCED L3/ EQF L4)	**F4.** Select and use technical literature and other sources of information to address broadly-defined problems. (ISCED L5/EQF L5)	**B4.** Select and evaluate technical literature and other sources of information to address broadly-defined problems. (ISCED L5/EQF L5)	**B4.** Select and evaluate technical literature and other sources of information to address broadly-defined problems. (ISCED L5/EQF L5)	**C4.** Select and evaluate technical literature and other sources of information to address complex problems. (ISCED L6/EQF L6)	**M4.** Select and critically evaluate technical literature and other sources of information to solve complex problems. (ISCED L7/EQF L7)	**M4.** Select and critically evaluate technical literature and other sources of information to solve complex problems. (ISCED L7/EQF L7)

Area of learning	National Certificates (continued)	Higher National Certificates (continued)	Foundation degrees (continued)	Bachelors Top-up (continued)	Bachelors degrees (continued)	Bachelors (Honours) (continued)	Masters degrees (continued)	Integrated Masters (continued)
On successful completion of an accredited or approved programme, an individual will be able to:								
Design and innovation Design is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges commensurate with the level of study.								
Design	**T5.** Contribute to design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet business, customer or user needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards. (ISCED L3/ EQF L4)	**H5.** Design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet business, customer or user needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards. (ISCED L3/ EQF L4)	**F5.** Design solutions for broadly-defined problems that meet a combination of user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards. (ISCED L5/EQF L5)	**B5.** Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (ISCED L5/EQF L5)	**B5.** Design solutions for broadly-defined problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (ISCED L5/EQF L5)	**C5.** Design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (ISCED L6/EQF L6)	**M5.** Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (ISCED L7/EQF L7)	**M5.** Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards. (ISCED L7/EQF L7)
Integrated/ systems approach	**T6.** Apply a systematic approach to the solution of well-defined problems. (ISCED L3/ EQF L4)	**H6.** Apply a systematic approach to the solution of well-defined problems. (ISCED L3/ EQF L4)	**F6.** Apply a systematic approach to the solution of broadly-defined problems. (ISCED L5/EQF L5)	**B6.** Apply an integrated or systems approach to the solution of broadly-defined problems. (ISCED L6/EQF L6)	**B6.** Apply an integrated or systems approach to the solution of broadly-defined problems. (ISCED L6/EQF L6)	**C6.** Apply an integrated or systems approach to the solution of complex problems. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M6.** Apply an integrated or systems approach to the solution of complex problems. (ISCED L6/EQF L6)

Area of learning	National Certificates (continued)	Higher National Certificates (continued)	Foundation degrees (continued)	Bachelors Top-up (continued)	Bachelors degrees (continued)	Bachelors (Honours) (continued)	Masters degrees (continued)	Integrated Masters (continued)
On successful completion of an accredited or approved programme, an individual will be able to:								
The engineer and society Engineering activity can have a significant societal impact and Engineers must operate in a responsible and ethical manner, recognise the importance of diversity, and help ensure that the benefits of innovation and progress are shared equitably and do not compromise the natural environment or deplete natural resources to the detriment of future generations.								
Sustainability	**T7.** Evaluate the environmental and societal impact of solutions to well-defined problems. (ISCED L3/ EQF L4)	**H7.** Evaluate the environmental and societal impact of solutions to well-defined problems. (ISCED L3/ EQF L4)	**F7.** Evaluate the environmental and societal impact of solutions to broadly-defined problems. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B7.** Evaluate the environmental and societal impact of solutions to broadly-defined problems. (ISCED L5/EQF L5)	**C7.** Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. (ISCED L6/EQF L6)	**M7.** Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts. (ISCED L7/EQF L7)	**M7.** Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts. (ISCED L7/EQF L7)
Ethics	**T8.** Apply ethical principles and recognise the need for engineers to exercise their responsibilities in an ethical manner and in line with professional codes of conduct. (ISCED L3/ EQF L4)	**H8.** Apply ethical principles and recognise the need for engineers to exercise their responsibilities in an ethical manner and in line with professional codes of conduct. (ISCED L3/ EQF L4)	**F8.** Identify ethical concerns and make reasoned ethical choices informed by professional codes of conduct. (ISCED L5/EQF L5)	**B8.** Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. (ISCED L6/EQF L6)	**B8.** Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. (ISCED L6/EQF L6)	**C8.** Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M8.** Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. (ISCED L6/EQF L6)
Risk	**T9.** Identify, evaluate and mitigate risks (the effects of uncertainty) specific to their field of activity. (ISCED L3/ EQF L4)	**H9.** Identify, evaluate and mitigate risks (the effects of uncertainty) associated with a well-defined project or activity. (ISCED L5/ EQF L4/5)	**F9.** Identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. (ISCED L5/EQF L5)	**B9.** Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. (ISCED L6/EQF L6)	**B9.** Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. (ISCED L6/EQF L6)	**C9.** Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M9.** Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. (ISCED L6/EQF L6)
Security	**T10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)	**H10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)	**F10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)	Learning outcome achieved at previous level of study (N.A.)	**B10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)	**C10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)	Learning outcome achieved at previous level of study (N.A.)	**M10.** Adopt a holistic and proportionate approach to the mitigation of security risks. (ISCED L3/ EQF L4)

Area of learning	National Certificates (continued)	Higher National Certificates (continued)	Foundation degrees (continued)	Bachelors Top-up (continued)	Bachelors degrees (continued)	Bachelors (Honours) (continued)	Masters degrees (continued)	Integrated Masters (continued)
On successful completion of an accredited or approved programme, an individual will be able to:								
Equality, diversity and inclusion	**T11.** Recognise the importance of equality, diversity and inclusion in the workplace. (ISCED L3/ EQF L4)	**H11.** Recognise the importance of equality, diversity and inclusion in the workplace. (ISCED L3/ EQF L4)	**F11.** Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B11.** Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion. (ISCED L5/EQF L5)	**C11.** Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M11.** Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion. (ISCED L6/EQF L6)
Engineering practice The practical application of engineering concepts and tools, engineering and project management, teamwork and communication skills. Engineers also require a sound grasp of the commercial context of their work, specifically the ways an organisation creates, delivers and captures value in economic, social, cultural or other contexts.								
Practical and workshop skills	**T12.** Use practical laboratory and workshop skills to investigate well-defined problems. (ISCED L3/ EQF L4)	**H12.** Use practical laboratory and workshop skills to investigate well-defined problems. (ISCED L3/ EQF L4)	**F12.** Use practical laboratory and workshop skills to investigate broadly-defined problems. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B12.** Use practical laboratory and workshop skills to investigate broadly-defined problems. (ISCED L5/EQF L5)	**C12.** Use practical laboratory and workshop skills to investigate complex problems. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M12.** Use practical laboratory and workshop skills to investigate complex problems. (ISCED L6/EQF L6)
Materials, equipment, technologies and processes	**T13.** Select and apply appropriate materials, equipment, engineering technologies and processes to plan and undertake well-defined programmes of work. (ISCED L3/ EQF L4)	**H13.** Select and apply appropriate materials, equipment, engineering technologies and processes to plan and undertake well-defined programmes of work. (ISCED L3/ EQF L4)	**F13.** Select and apply appropriate materials, equipment, engineering technologies and processes. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B13.** Select and apply appropriate materials, equipment, engineering technologies and processes. (ISCED L5/EQF L5)	**C13.** Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M13.** Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations. (ISCED L6/EQF L6)
Quality management	**T14.** Recognise the need for quality management systems and continuous improvement in the context of well-defined problems. (ISCED L3/ EQF L4)	**H14.** Recognise the need for quality management systems and continuous improvement in the context of well-defined problems. (ISCED L3/ EQF L4)	**F14.** Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B14.** Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems. (ISCED L5/EQF L5)	**C14.** Discuss the role of quality management systems and continuous improvement in the context of complex problems. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M14.** Discuss the role of quality management systems and continuous improvement in the context of complex problems. (ISCED L6/EQF L6)

Area of learning	National Certificates (continued)	Higher National Certificates (continued)	Foundation degrees (continued)	Bachelors Top-up (continued)	Bachelors degrees (continued)	Bachelors (Honours) (continued)	Masters degrees (continued)	Integrated Masters (continued)
On successful completion of an accredited or approved programme, an individual will be able to:								
Engineering and project management	**T15.** Demonstrate awareness of engineering management principles, commercial context and project management. (ISCED L3/ EQF L4)	**H15.** Apply knowledge of engineering management principles, commercial context and project management to well-defined problems. (ISCED L5/ EQF L4/5)	**F15.** Apply knowledge of engineering management principles, commercial context and project management. (ISCED L5/EQF L5)	**B15.** Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters. (ISCED L6/EQF L6)	**B15.** Apply knowledge of engineering management principles, commercial context, project management and relevant legal matters. (ISCED L6/EQF L6)	**C15.** Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights. (ISCED L6/EQF L6)	Learning outcome achieved at previous level of study (N.A.)	**M15.** Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights. (ISCED L6/EQF L6)
Teamwork	**T16.** Function effectively as an individual and as a member of a team. (ISCED L3/ EQF L4)	**H16.** Function effectively as an individual and as a member of a team. (ISCED L3/ EQF L4)	**F16.** Function effectively as an individual, and as a member or leader of a team. (ISCED L5/EQF L5)	Learning outcome achieved at previous level of study (N.A.)	**B16.** Function effectively as an individual, and as a member or leader of a team. (ISCED L5/EQF L5)	**C16.** Function effectively as an individual, and as a member or leader of a team. (ISCED L5/EQF L5)	**M16.** Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance. (ISCED L7/EQF L7)	**M16.** Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance. (ISCED L7/EQF L7)
Communication	**T17.** Communicate effectively with technical and non-technical audiences. (ISCED L3/ EQF L4)	**H17.** Communicate effectively with technical and non-technical audiences. (ISCED L3/ EQF L4)	**F17.** Communicate effectively with technical and non-technical audiences. (ISCED L3/ EQF L4)	Learning outcome achieved at previous level of study (N.A.)	**B17.** Communicate effectively with technical and non-technical audiences. (ISCED L3/ EQF L4)	**C17.** Communicate effectively on complex engineering matters with technical and non-technical audiences. (ISCED L6/EQF L6)	**M17.** Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. (ISCED L7/EQF L7)	**M17.** Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. (ISCED L7/EQF L7)
Lifelong learning	**T18.** Plan and record self-learning and improve performance, as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)	**H18.** Plan and record self-learning and improve performance, as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)	**F18.** Plan and record self-learning and development as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)	Learning outcome achieved at previous level of study (N.A.)	**B18.** Plan and record self-learning and development as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)	**C18.** Plan and record self-learning and development as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)	Learning outcome achieved at previous level of study (N.A.)	**M18.** Plan and record self-learning and development as the foundation for lifelong learning/CPD. (ISCED L3/ EQF L4)