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

Published by the Engineering Council 2020

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 Certification	ates/	Higher National		Foundation of	legrees and	Bachelors de	grees and	Bachelors (Ho	nours)	Masters deg	rees other	Integrated Mas	sters (MEng)
Diplomas and ed	quivalent	Certificate and	equivalent	equivalent qu	ualifications	Bachelors (H	onours)	degrees accredited as		than the Integrated Masters		degrees accredited for	
qualifications ac	credited or	qualifications ad	ccredited	accredited as	partially	degrees accredited for		partially meeting the		(MEng) (accredited as		CEng registra	tion
approved as fully	y meeting	as meeting the	educational	meeting the	educational	IEng registrat	tion (including	educational re	quirement	further learn	ing to Masters		
the academic red	quirement	requirements fo	r	requirement	for IEng	Top-up degre	es)	for CEng regis	tration	level, partial	ly meeting the		
for EngTech regi	istration	progression tow	vards	registration (further			(further learning	ng to Masters	educational	requirement		
		IEng registration	n (further	learning to B	achelors level			level will be re	quired)	for CEng)			
		learning to Back	nelors level	will be requir	red)								
		will be required))										
ISCED:	Level 3	ISCED:	Level 5	ISCED:	Level 5	ISCED:	Level 6	ISCED:	Level 6	ISCED:	Level 7	ISCED:	Level 7
EQF:	Level 4	EQF:	Level 4/5	EQF:	Level 5	EQF:	Level 6	EQF:	Level 6	EQF:	Level 7	EQF:	Level 7
National Certificat	tes/	Higher National (Certificates	Foundation de	egrees or	Bachelors deg	rees and	Bachelors (Hon	ours)	Masters Degr	rees other	Integrated Mas	ters degrees
Diplomas or equiv	valent	or equivalent qua	alifications	equivalent qua	alifications	Bachelors (Ho	nours) degrees	degrees accred	ited for the	than the Integ	grated Masters	(often denoted	MEng)
qualifications acci	redited	accredited for the	purpose	accredited for	the purpose of	accredited for	the purpose of	purpose of CEn	g registration	accredited as	further learning	accredited for t	the purpose of
for the purpose of	f EngTech	of progression to	wards lEng	IEng registrati	on will have an	IEng registrati	on will have an	will have an em	phasis on	to Masters lev	vel for the	CEng registrati	ion will have
registration will ha	ave an	registration will ha	ave an	emphasis on t	the applications	emphasis on t	he applications	developing solu	tions to	purpose of Cl	Eng registration	an emphasis o	n developing
emphasis on the	practical	emphasis on the	practical	of current and	developing	of current and	developing	engineering pro	blems using	vary in nature	e. Some offer	solutions to pro	•
application of curr	rent and	application of cur	rent and	technology.		technology.		new or existing	technologies,	the chance to	study in	new or existing	•
developing techno	ology.	developing techn	ology.					through innovat	ion, creativity	greater depth	particular	through innova	tion, creativity
								and change.		aspects or ap	plications	and change.	
										of a broader of	discipline in	The Integrated	Masters will
										which the gra	duate holds	go beyond the	outcomes
										an Honours d	legree at	of accredited B	Bachelors
										Bachelors lev	el. Others bring	(Honours) degr	rees to provide
										together diffe	rent engineering	a greater range	e and depth of
										disciplines or	subdisciplines	specialist know	ledge, within
										in the study o	f a particular	an authentic er	nvironment, as
										topic, or engi	neering	well as a broad	ler and more
										application.		general acader	mic base.

ISCED: Level 3	ISCED:	Level 5	ISCED:	Level 5	ISCED:	Level 6	ISCED:	Level 6	ISCED:	Level 7	ISCED:	Level 7
EQF: Level 4	EQF:	Level 4/5		Level 5	EQF:	Level 6	EQF:	Level 6	EQF:	Level 7	EQF:	Level 7
An individual who has	An individual who		An individual wl		Graduates from		Graduates from		These programme		These program	
completed a National	completed a Highe	er	completed a Fo	undation	degrees or Bach	elors	(Honours) degre	ee must	provide a foundati		provide a found	
Certificate/Diploma or	National Certificate		degree or equiv		(Honours) degre		achieve the pres		i leadership and inn		leadership and	innovative
equivalent qualification	equivalent qualifica		qualification mu		achieve the pres		learning outcom		engineering practi		engineering pra	
or apprenticeship must	or apprenticeship r		prescribed learr	ning outcomes	learning outcome		possess a coher					
achieve the prescribed	achieve the prescr		and will posses	•	possess a coher		of knowledge inc	cluding	Graduates from a	Masters	Graduates from	an Integrated
learning outcomes and will	learning outcomes	and will	body of knowled	dge including	of knowledge inc	luding	mathematics, na	tural science	Degree other than	the	Masters degree	_
possess a coherent body	possess a coherer	nt body	mathematics, n	atural science	mathematics, na	tural science	and engineering	principles,	Integrated Masters	s must	the prescribed I	earning
of knowledge including	of knowledge inclu	ıding	and engineering	g principles,	and engineering	principles,	and a proven ab	ility to apply	achieve the prescr	ibed	outcomes and v	will possess
mathematics, natural science	mathematics, natu	ral science	and a proven al	bility to apply	and a proven ab	ility to apply	that knowledge t	o analyse	learning outcomes	and will	a broad and col	nerent body
and engineering principles,	and engineering pr	rinciples,	that knowledge	to analyse	that knowledge t	o analyse	and solve compl	ex problems.	possess a coherer	nt body	of knowledge in	cluding
and a proven ability to apply	and a proven abilit	ty to apply	and solve broad	dly-defined	and solve broadl	y-defined	Some of the kno	wledge will	of knowledge inclu	ıding	mathematics, na	atural science
that knowledge to analyse	that knowledge to	analyse	problems using	established	problems using 6	established	be at the forefro	nt of the	mathematics, natu	ıral science	and engineering	g principles,
and solve well-defined	and solve well-defi	ined	principles and to	echniques.	principles and te	chniques.	particular subjec	t of study.	and engineering p	rinciples,	and a proven al	oility to apply
programmes of work and	programmes of wo	ork and			Some of the kno	wledge			and a proven abilit	ty to apply	that knowledge	to analyse
associated problems using	associated probler	ms using	With an appreci	iation of	will be informed	by current	Graduates will b	e able to	that knowledge to	analyse	and solve comp	lex problems.
established principles and	established princip	oles and	professional en	gineering	developments in	the subject	select and apply	quantitative	and solve complex	c problems.	Much of the kno	owledge will
techniques.	techniques.		practice and eth	nics,	of study.		and computation	nal analysis	Much of the knowl	edge will	be at the forefro	ont of the
			graduates will b	e able to			techniques, reco	gnising the	be at the forefront	of the	particular subje	ct of study.
			apply their knov	wledge and	With an apprecia	ition of	limitations of the	methods	particular subject of	of study.		
			skills to new site	uations.	professional eng	ineering	employed.				Graduates will b	oe able to
					practice and ethi	•			Graduates will be		select and apply	-
					graduates will be		With an apprecia		select and apply q		and computatio	•
					_		professional eng	_	and computational	-	techniques in th	
					to apply their kno	•	practice and ethi	,	techniques in the		of complete dat	•
					and skills to desi	_	graduates will be		of complete data,	ū		of the methods
					deliver products,	-	commercially aw		the limitations of th	ne methods	employed.	
					and processes to		to apply their kno	· ·	employed.			
					defined needs us	sing current	skills to design a		1A/201	•	With an appreci	
					technology.		new products or		With an appreciati		professional en	-
							meet defined ne	Ü	professional engin	•	practice and eth	•
							new or existing t	ecnnologies.	practice and ethics	5,	graduates will b	
									graduates will be	المامية من الما	commercially av	
									commercially awa		1	•
									to apply their know	ū	and skills to des	•
									and skills to design		and evaluate in	
									and evaluate innov		products or serv	
									products or service		defined needs u	•
									defined needs using existing technolog	•	existing technol	ogies.
									CAISTING LECTION			

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



	Engineering Techni	cian (EngTech)	Inco	rporated Engineer (I	Eng)	Chartered Engineer (CEng)			
Area of learning	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 FL)	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 FL)	Integrated Masters degrees and equivalent qualifications and apprenticeships accredited or approved as fully meeting the academ requirement for CEr registration (CEng)	
Science and ma	ineering requires a substa	antial grounding in engine	ering principles, science				M1 Apply a	M1. Apply a	
mathematics	1	mathematics, statistics,	'''	1	mathematics, statistics,	'''	comprehensive	comprehensive	
and	natural science and	natural science and	natural science and	natural science and	natural science and	natural science	knowledge of	knowledge of	
engineering principles	engineering principles to well-defined problems. (ISCED L3/ EQF L4)	engineering principles to well-defined problems. (ISCED L3/ EQF L4)	engineering principles to broadly-defined problems. (ISCED L5/EQF L5)	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)	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)	and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study.	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)	will be at the forefront	

Area of	National Certificates	Higher National	Foundation degrees	Bachelors Top-up	Bachelors degrees	Bachelors (Honours)	Masters degrees	Integrated Masters
learning	(continued)	Certificates (continued)	(continued)	(continued)	(continued)	(continued)	(continued)	(continued)
On successful c	completion of an accred	ited or approved progra	amme, an individual wil	be able to:				
Engineering and	alysis							
Engineering anal	ysis involves the applicat	ion of engineering concep	ots and tools to analyse, i	model and solve problems	s. At higher levels of stud	y engineers will work with	n information that may be	uncertain or incomplete
Problem	T2. Analyse well-	H2. Analyse well-	F2. Analyse broadly-	B2. Analyse broadly-	B2. Analyse broadly-	C2. Analyse complex	M2. Formulate and	M2. Formulate and
analysis	defined problems reaching substantiated conclusions. (ISCED L3/ EQF L4)	defined problems reaching substantiated conclusions. (ISCED L3/ EQF L4)	defined problems reaching substantiated conclusions. (ISCED L5/ EQF L4/5)	defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	defined problems reaching substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles. (ISCED L6/EQF L6)	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	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)	techniques employed. (ISCED L7/EQF L7)
_	T3. Use appropriate computational and	H3. Use appropriate computational and	F3. Use appropriate computational and	B3. Select and apply appropriate	B3 . Select and apply appropriate	C3 . Select and apply appropriate	M3. Select and apply appropriate	M3. Select and apply appropriate
	analytical techniques to solve well-defined problems.	analytical techniques to solve well-defined problems recognising	analytical techniques to model broadly-defined problems.	1	computational and analytical techniques to model broadly-defined	computational and	computational and analytical techniques to model complex	computational and analytical techniques to model complex
	(ISCED L3/ EQF L4)	the limitations of the techniques employed. (ISCED L5/ EQF L4/5)	(ISCED L5/EQF L5)	problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	problems, recognising the limitations of the techniques employed. (ISCED L6/EQF L6)	problems, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)	problems, discussing the limitations of the techniques employed. (ISCED L7/EQF L7)
Technical	F4. Select and use	H4. Select and use	F4. Select and use	B4. Select and	B4. Select and	C4. Select and	M4. Select and	M4. Select and
literature	technical literature	technical literature	technical literature	evaluate technical	evaluate technical	evaluate technical	critically evaluate	critically evaluate
	and other sources of information to address	and other sources of information to address	and other sources of information to address	literature and other sources of information	literature and other sources of information	literature and other sources of information	technical literature and other sources of	technical literature and other sources of
	well-defined problems. (ISCED L3/ EQF L4)	well-defined problems. (ISCED L3/ EQF L4)	broadly-defined problems. (ISCED L5/EQF L5)	to address broadly- defined problems. (ISCED L5/EQF L5)	to address broadly- defined problems. (ISCED L5/EQF L5)	to address complex problems. (ISCED L6/EQF L6)	information to solve complex problems. (ISCED L7/EQF L7)	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 accred	ited or approved progra	mme, an individual will	be able to:				
Design and in	novation							
Design is the ci	reation and development o	f an economically viable p	roduct, process or system	m to meet a defined need	. It involves significant ted	chnical and intellectual ch	allenges commensurate	with the level of study.
Design	T5. Contribute to	H5. Design solutions	F5. Design solutions	B5. Design solutions	B5. Design solutions	C5. Design solutions	M5. Design solutions	M5. Design solutions
	design solutions for	for well-defined	for broadly-defined	for broadly-defined	for broadly-defined	for complex	for complex problems	for complex problems
	well-defined technical	technical problems	problems that meet	problems that meet	problems that meet	problems that meet	that evidence some	that evidence some
	problems and assist	and assist with the	a combination of	a combination of	a combination of	a combination of	originality and meet	originality and meet
	with the design of	design of systems,	user, business and	societal, user, business	societal, user, business	societal, user, business	a combination of	a combination of
	systems, components	components or	customer needs as	and customer needs as	and customer needs as	and customer needs as	societal, user, business	societal, user, business
	or processes to meet	processes to meet	appropriate. This will	appropriate. This will	appropriate. This will	appropriate. This will	and customer needs as	and customer needs as
	business, customer	business, customer	involve consideration	involve consideration	involve consideration	involve consideration	appropriate. This will	appropriate. This will
	or user needs as	or user needs as	of applicable	of applicable health	of applicable health	of applicable health	involve consideration	involve consideration
	appropriate. This will	appropriate. This will	health and safety,	and safety, diversity,	and safety, diversity,	and safety, diversity,	of applicable health	of applicable health
	involve consideration	involve consideration	diversity, inclusion,	inclusion, cultural,	inclusion, cultural,	inclusion, cultural,	and safety, diversity,	and safety, diversity,
	of applicable	of applicable	cultural, societal and	societal, environmental	societal, environmental	societal, environmental	inclusion, cultural,	inclusion, cultural,
	health and safety,	health and safety,	environmental matters,	and commercial	and commercial	and commercial	societal, environmental	societal, environmenta
	diversity, inclusion,	diversity, inclusion,	codes of practice and	matters, codes of	matters, codes of	matters, codes of	and commercial	and commercial
	cultural, societal and	cultural, societal and	industry standards.	practice and industry	practice and industry	practice and industry	matters, codes of	matters, codes of
	environmental matters,	environmental matters,	(ISCED L5/EQF L5)	standards.	standards.	standards.	practice and industry	practice and industry
	codes of practice and	codes of practice and		(ISCED L5/EQF L5)	(ISCED L5/EQF L5)	(ISCED L6/EQF L6)	standards.	standards.
	industry standards.	industry standards.					(ISCED L7/EQF L7)	(ISCED L7/EQF L7)
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)						
Integrated/	T6. Apply a systematic	H6. Apply a systematic	F6. Apply a systematic	B6. Apply an integrated	B6. Apply an integrated	C6. Apply an integrated		M6. Apply an
systems	approach to the	approach to the	approach to the	or systems approach to	or systems approach to	or systems approach to	Learning outcome	integrated or systems
approach	solution of well-defined	solution of well-defined	solution of broadly-	the solution of broadly-	the solution of broadly-	the solution of complex	achieved at previous	approach to the
	problems.	problems.	defined problems.	defined problems.	defined problems.	problems.	level of study	solution of complex
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L5/EQF L5)	(ISCED L6/EQF L6)	(ISCED L6/EQF L6)	(ISCED L6/EQF L6)	(N.A.)	problems.
								(ISCED L6/EQF L6)

Area of	National Certificates	Higher National	Foundation degrees	Bachelors Top-up	Bachelors degrees	Bachelors (Honours)	Masters degrees	Integrated Masters
learning	(continued)	Certificates (continued)	(continued)	(continued)	(continued)	(continued)	(continued)	(continued)
On successful	completion of an accred	ited or approved progra	amme, an individual wil	I be able to:		,		
The engineer a	nd society							
Engineering acti	vity can have a significant	societal impact and Engi	neers must operate in a	responsible and ethical m	nanner, recognise the imp	ortance of diversity, and I	nelp ensure that the bene	fits of innovation and
progress are sha	ared equitably and do not	compromise the natural e	environment or deplete na	atural resources to the de	triment of future generati	ons.		
Sustainability	T7. Evaluate the	H7. Evaluate the	F7. Evaluate the		B7. Evaluate the	C7. Evaluate the	M7. Evaluate the	M7. Evaluate the
	environmental and	environmental and	environmental and		environmental and	environmental and	environmental and	environmental and
	societal impact of	societal impact of	societal impact of		societal impact of	societal impact of	societal impact of	societal impact of
	solutions to well-	solutions to well-	solutions to broadly-	Learning outcome	solutions to broadly-	solutions to complex	solutions to complex	solutions to complex
	defined problems.	defined problems.	defined problems.	achieved at previous	defined problems.	problems and minimise	problems (to include	problems (to include
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L5/EQF L5)	level of study	(ISCED L5/EQF L5)	adverse impacts.	the entire life-cycle of	the entire life-cycle of
				(N.A.)		(ISCED L6/EQF L6)	a product or process)	a product or process)
							and minimise adverse	and minimise adverse
							impacts.	impacts.
							(ISCED L7/EQF L7)	(ISCED L7/EQF L7)
Ethics	T8. Apply ethical	H8. Apply ethical	F8. Identify ethical	B8. Identify and	B8. Identify and	C8. Identify and		M8. Identify and
	principles and	principles and	concerns and make	analyse ethical	analyse ethical	analyse ethical		analyse ethical
	recognise the need for	recognise the need for	reasoned ethical	concerns and make	concerns and make	concerns and make	Loorning outcome	concerns and make
	engineers to exercise	engineers to exercise	choices informed by	reasoned ethical	reasoned ethical	reasoned ethical	Learning outcome achieved at previous	reasoned ethical
	their responsibilities in	their responsibilities in	professional codes of	choices informed by	choices informed by	choices informed by	level of study	choices informed by
	an ethical manner and	an ethical manner and	conduct.	professional codes of	professional codes of	professional codes of	1	professional codes of
	in line with professional	in line with professional	(ISCED L5/EQF L5)	conduct.	conduct.	conduct.	(N.A.)	conduct.
	codes of conduct.	codes of conduct.		(ISCED L6/EQF L6)	(ISCED L6/EQF L6)	(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)						
Risk	T9. Identify, evaluate	H9. Identify, evaluate	F9. Identify, evaluate	B9. Use a risk	B9. Use a risk	C9. Use a risk		M9. Use a risk
	and mitigate risks (the	and mitigate risks (the	and mitigate risks (the	management process	management process	management process		management process
	effects of uncertainty)	effects of uncertainty)	effects of uncertainty)	to identify, evaluate	to identify, evaluate	to identify, evaluate	Learning outcome	to identify, evaluate
	specific to their field of	associated with a	associated with a	and mitigate risks (the	and mitigate risks (the	and mitigate risks (the	achieved at previous	and mitigate risks (the
	activity.	well-defined project or	particular project or	effects of uncertainty)	effects of uncertainty)	effects of uncertainty)	level of study	effects of uncertainty)
	(ISCED L3/ EQF L4)	activity.	activity.	associated with a	associated with a	associated with a	(N.A.)	associated with a
		(ISCED L5/ EQF L4/5)	(ISCED L5/EQF L5)	particular project or	particular project or	particular project or	(14.7 t.)	particular project or
				activity.	activity.	activity.		activity.
				(ISCED L6/EQF L6)	(ISCED L6/EQF L6)	(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
Security	T10. Adopt a holistic	H10. Adopt a holistic	F10. Adopt a holistic		B10. Adopt a holistic	C10. Adopt a holistic		M10. Adopt a holistic
	and proportionate	and proportionate	and proportionate	Learning outcome	and proportionate	and proportionate	Learning outcome	and proportionate
	approach to the	approach to the	approach to the	achieved at previous	approach to the	approach to the	achieved at previous	approach to the
	mitigation of security	mitigation of security	mitigation of security	level of study	mitigation of security	mitigation of security	level of study	mitigation of security
	risks.	risks.	risks.	(N.A.)	risks.	risks.	(N.A.)	risks.
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)		(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)		(ISCED L3/ EQF L4)

Area of	National Certificates	Higher National	Foundation degrees	Bachelors Top-up	Bachelors degrees	Bachelors (Honours)	Masters degrees	Integrated Masters
learning	(continued)	Certificates (continued)		(continued)	(continued)	(continued)	(continued)	(continued)
	completion of an accred		,	,	<u> </u>	1 (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 (0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Equality,	T11. Recognise the	H11. Recognise the	F11. Recognise		B11. Recognise	C11. Adopt an		M11. Adopt an
diversity and	importance of equality,	importance of equality,	the responsibilities,		the responsibilities,	inclusive approach to		inclusive approach to
inclusion	diversity and inclusion	diversity and inclusion	benefits and		benefits and	engineering practice		engineering practice
	in the workplace.	in the workplace.	importance of	Learning outcome	importance of	and recognise the	Learning outcome	and recognise the
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	supporting equality,	achieved at previous	supporting equality,	responsibilities,	achieved at previous	responsibilities,
			diversity and inclusion.	level of study	diversity and inclusion.	benefits and	level of study	benefits and
			(ISCED L5/EQF L5)	(N.A.)	(ISCED L5/EQF L5)	importance of	(N.A.)	importance of
			, ,	, ,		supporting equality,	, ,	supporting equality,
						diversity and inclusion.		diversity and inclusion.
						(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
Engineering pra	actice		•			, . ,		, . ,
	olication of engineering co	ncepts and tools, engine	ering and project manage	ement, teamwork and cor	nmunication skills. Engine	eers also require a sound	grasp of the commercial	context of their work,
specifically the w	ays an organisation creat	es, delivers and captures	value in economic, socia	al, cultural or other contex	rts.	·		
Practical and	T12. Use practical	H12. Use practical	F12. Use practical		B12. Use practical	C12. Use practical		M12. Use practical
workshop	laboratory and	laboratory and	laboratory and	Learning outcome	laboratory and	laboratory and	Learning outcome	laboratory and
skills	workshop skills to	workshop skills to	workshop skills to	achieved at previous	workshop skills to	workshop skills to	achieved at previous	workshop skills to
	investigate well-defined	investigate well-defined	investigate broadly-	level of study	investigate broadly-	investigate complex	level of study	investigate complex
	problems.	problems.	defined problems.	(N.A.)	defined problems.	problems.	(N.A.)	problems.
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L5/EQF L5)		(ISCED L5/EQF L5)	(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
Materials,	T13. Select and apply	H13. Select and apply	F13. Select and apply		B13. Select and apply	C13. Select and apply		M13. Select and apply
equipment,	appropriate materials,	appropriate materials,	appropriate materials,		appropriate materials,	appropriate materials,		appropriate materials,
technologies	equipment, engineering	equipment, engineering	equipment, engineering	Learning outcome	equipment, engineering	equipment, engineering	Learning outcome	equipment, engineering
and processes	technologies and	technologies and	technologies and	achieved at previous	technologies and	technologies and	achieved at previous	technologies and
	processes to plan and	processes to plan and	processes.	level of study	processes.	processes, recognising	level of study	processes, recognising
	undertake well-defined	undertake well-defined	(ISCED L5/EQF L5)	(N.A.)	(ISCED L5/EQF L5)	their limitations.	(N.A.)	their limitations.
	programmes of work.	programmes of work.				(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)						
Quality	T14. Recognise	H14. Recognise	F14. Recognise		B14. Recognise	C14. Discuss the		M14. Discuss
management	the need for quality	the need for quality	the need for quality		the need for quality	role of quality		the role of quality
	management systems	management systems	management systems	Learning outcome	management systems	management systems	Learning outcome	management systems
	and continuous	and continuous	and continuous	achieved at previous	and continuous	and continuous	achieved at previous	and continuous
	improvement in the	improvement in the	improvement in the	level of study	improvement in the	improvement in the	level of study	improvement in the
	context of well-defined	context of well-defined	context of broadly-	(N.A.)	context of broadly-	context of complex	(N.A.)	context of complex
	problems.	problems.	defined problems.		defined problems.	problems.		problems.
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L5/EQF L5)		(ISCED L5/EQF L5)	(ISCED L6/EQF L6)		(ISCED L6/EQF L6)

Area of	National Certificates	Higher National	Foundation degrees	Bachelors Top-up	Bachelors degrees	Bachelors (Honours)	Masters degrees	Integrated Masters
learning	(continued)	Certificates (continued)	(continued)	(continued)	(continued)	(continued)	(continued)	(continued)
On successful o	ompletion of an accred	lited or approved progra	amme, an individual wil	l be able to:				
Engineering	T15. Demonstrate	H15. Apply knowledge	F15. Apply knowledge	B15. Apply knowledge	B15. Apply knowledge	C15. Apply knowledge		M15. Apply knowledge
and project	awareness of	of engineering	of engineering	of engineering	of engineering	of engineering		of engineering
management	engineering	management	management	management	management	management		management
	management	principles, commercial	principles, commercial	principles, commercial	principles, commercial	principles, commercial	1	principles, commercial
	principles, commercial	context and project	context and project	context, project	context, project	context, project and	Learning outcome achieved at previous	context, project and
	context and project	management to	management.	management and	management and	change management,		change management,
	management.	well-defined problems.	(ISCED L5/EQF L5)	relevant legal matters.	relevant legal matters.	and relevant legal	level of study	and relevant legal
	(ISCED L3/ EQF L4)	(ISCED L5/ EQF L4/5)		(ISCED L6/EQF L6)	(ISCED L6/EQF L6)	matters including	(N.A.)	matters including
						intellectual property		intellectual property
						rights.		rights.
						(ISCED L6/EQF L6)		(ISCED L6/EQF L6)
Teamwork	T16. Function	H16. Function	F16. Function		B16. Function	C16. Function	M16. Function	M16. Function
	effectively as an	effectively as an	effectively as an		effectively as an	effectively as an	effectively as an	effectively as an
	individual and as a	individual and as a	individual, and as a	Learning outcome	individual, and as a	individual, and as a	individual, and as a	individual, and as a
	member of a team.	member of a team.	member or leader of a	achieved at previous	member or leader of a	member or leader of a	member or leader	member or leader
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	team.	level of study	team.	team.	of a team. Evaluate	of a team. Evaluate
			(ISCED L5/EQF L5)	(N.A.)	(ISCED L5/EQF L5)	(ISCED L5/EQF L5)	effectiveness of own	effectiveness of own
							and team performance.	and team performance.
							(ISCED L7/EQF L7)	(ISCED L7/EQF L7)
Communication	T17. Communicate	H17. Communicate	F17. Communicate		B17. Communicate	C17. Communicate	M17. Communicate	M17. Communicate
	effectively with	effectively with	effectively with		effectively with	effectively on complex	effectively on complex	effectively on complex
	technical and non-	technical and non-	technical and non-	Learning outcome	technical and non-	engineering matters	engineering matters	engineering matters
	technical audiences.	technical audiences.	technical audiences.	Learning outcome	technical audiences.	with technical and non-	with technical and non-	with technical and non-
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	achieved at previous	(ISCED L3/ EQF L4)	technical audiences.	technical audiences,	technical audiences,
				level of study		(ISCED L6/EQF L6)	evaluating the	evaluating the
				(N.A.)			effectiveness of the	effectiveness of the
							methods used.	methods used.
							(ISCED L7/EQF L7)	(ISCED L7/EQF L7)
Lifelong	T18. Plan and record	H18. Plan and record	F18. Plan and record		B18. Plan and record	C18. Plan and record		M18. Plan and record
learning	self-learning and	self-learning and	self-learning and	Learning outcome	self-learning and	self-learning and	Learning outcome	self-learning and
	improve performance,	improve performance,	development as the	achieved at previous	development as the	development as the	achieved at previous	development as the
	as the foundation for	as the foundation for	foundation for lifelong	level of study	foundation for lifelong	foundation for lifelong	level of study	foundation for lifelong
	lifelong learning/CPD.	lifelong learning/CPD.	learning/CPD.	(N.A.)	learning/CPD.	learning/CPD.	(N.A.)	learning/CPD.
	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)		(ISCED L3/ EQF L4)	(ISCED L3/ EQF L4)		(ISCED L3/ EQF L4)