

**GRADUATE DIPLOMA
IN ENGINEERING - 9210**

**POST GRADUATE DIPLOMA
IN ENGINEERING - 9210**



INTRODUCTION TO THE QUALIFICATIONS

Graduate Diplomas and Post Graduate Diplomas have been developed for those undergoing training or employed in Civil, Electrical, Electronic, Telecommunication, Information Technology and Mechanical Engineering areas of work.

The programmes aim to reflect the international nature of the knowledge and skills and activities needed for different countries or cultures.

These new awards are City & Guilds successions' to the ECuk 9107 series of examinations.

ENGINEERING

**LEVEL 6 / 7
GRADUATE / POST GRADUATE DIPLOMA
IN ENGINEERING - 9210**



CIVIL ENGINEERING



ELECTRICAL ENGINEERING



**ELECTRONIC AND
TELECOMMUNICATION ENGINEERING**



INFORMATION TECHNOLOGY



MECHANICAL ENGINEERING



ENGINEERING

GUIDELINES FOR THE GRADUATE DIPLOMA

The Level 6 Graduate Diploma in Engineering is set at the standard of the final (third) year of a British BEng (Honours) degree course. It is advised that the Level 6 Graduate Diploma in Engineering consist of 1800 Notional Hours (total learning hours including the Guided Learning Hours and self study/research).

LEARNER ENTRY REQUIREMENTS

Learners must be registered for Graduate Diploma at the beginning of the course in order for practical and project work to be monitored.

Acceptance on to the Graduate Diploma course is through possession of a relevant City & Guilds Advanced Technician Diploma or Higher National Diploma. Acceptance of other local qualifications would be subject to City & Guilds checks and approval.

GUIDELINES FOR THE POST GRADUATE DIPLOMA

The Level 7 Post Graduate Diploma in Engineering is set at the standard of the final (fourth) year of a British MEng degree course. It is advised that the Level 7 Post Graduate Diploma in Engineering consist of 1500 Notional Hours (total learning hours including the Guided Learning Hours and self study/research).

LEARNER ENTRY REQUIREMENTS

Learners must be registered for Post Graduate Diploma at the beginning of the course in order for practical and project work to be accepted. Acceptance on to the Post Graduate Diploma course is through possession of a relevant City & Guilds Graduate Diploma or holding a BEng (Honours) accredited by a local or UK professional body.

Acceptance of other local qualifications would be subject to City & Guilds checks and approval. Please contact your local City & Guilds branch office for more details.



LEVEL 6

GRADUATE DIPLOMA IN CIVIL ENGINEERING

To achieve the above qualification learners must successfully complete :

- **Three** “General Compulsory” plus **four** “Field Compulsory”
- Any **four** “Optional” units

To receive this award the learner must complete the practical assignments –139, 602-605, plus appropriate practical assignments for the chosen optional units (606-611).



QUALIFICATION STRUCTURE

THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 100		Engineering Mathematics	General Compulsory
Unit 101		Management for Engineers	General Compulsory
Unit 102	602	Mechanics of Solids and Basic Structural Analysis	Field Compulsory
Unit 103	603	Hydraulics and Hydrology	Field Compulsory
Unit 104	604	Engineering Surveying	Field Compulsory
Unit 105	605	Soil Mechanics and Engineering Geology	Field Compulsory
Unit 106	606	Building Engineering	Optional
Unit 107	607	Quantity Surveying	Optional
Unit 108	608	Highway Engineering	Optional
Unit 109	609	Irrigation Engineering	Optional
Unit 110	610	Water and Waste Engineering	Optional
Unit 111	611	Structural Analysis	Optional
Unit 139		Project 1	General Compulsory

LEVEL 7

POST GRADUATE DIPLOMA IN CIVIL ENGINEERING

To achieve the above qualification learners must successfully complete :

- **Two** “General Compulsory” plus **three** “Field Compulsory”
- Any **three** “Optional” units

To receive this award the candidate must complete the following practical assignments –229, plus an appropriate practical assignment for the chosen optional unit (611).



QUALIFICATION STRUCTURE

THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 200		Engineering Analysis	General Compulsory
Unit 201		Construction Engineering and Management	Field Compulsory
Unit 202		Environmental Engineering	Field Compulsory
Unit 203		Computational Mechanics Using Finite Element Method	Field Compulsory
Unit 204		Geotechnical Engineering	Optional
Unit 205		Built Environment 1	Optional
Unit 206		Structural Design	Optional
Unit 207		Fluid Mechanics and Coastal Engineering	Optional
Unit 208		Built Environment 2	Optional
Unit 111	611	Structural Analysis	Optional
Unit 138		Quality and Reliability Engineering	Optional
Unit 229		Project 2	General Compulsory

LEVEL 6 GRADUATE DIPLOMA IN ELECTRICAL ENGINEERING SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Three** “General Compulsory” plus **four** “Field Compulsory”
- Any **four** “Optional” units

To receive this award the learner must complete the following practical assignments –139, 612, 614-616, plus appropriate practical assignments for the chosen optional units (618, 636).



QUALIFICATION STRUCTURE

THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 100		Engineering Mathematics	General Compulsory
Unit 101		Management for Engineers	General Compulsory
Unit 112	612	Circuits and Waves	Field Compulsory
Unit 114	614	Electrical Energy System	Field Compulsory
Unit 115	615	Electrical Machines and Drives	Field Compulsory
Unit 116	616	Electronics and Telecommunications	Field Compulsory
Unit 118	618	Communication Systems	Field Compulsory
Unit 121		Computer Networks	Optional
Unit 123		Computer Architecture and Operating Systems	Optional
Unit 124		Database Management	Optional
Unit 127		Software Engineering	Optional
Unit 136	636	Control Systems	Optional
Unit 139		Project 1	General Compulsory

LEVEL 7 POST GRADUATE DIPLOMA IN ELECTRICAL ENGINEERING SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Two** “General Compulsory” plus **three** “Field Compulsory”
- Any **three** “Optional” units

To receive this award the candidate must complete the following practical assignments –229.



QUALIFICATION STRUCTURE

THEORY	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 200	Engineering Analysis	General Compulsory
Unit 209	Power System Economics and Planning	Field Compulsory
Unit 210	High Voltage Engineering	Field Compulsory
Unit 211	Fields and Network Theory	Field Compulsory
Unit 213	Digital System Design	Optional
Unit 215	Modern Control Systems	Optional
Unit 217	Power Electronics	Optional
Unit 218	Internet Technologies	Optional
Unit 219	Computer System Engineering	Optional
Unit 229	Project 2	General Compulsory

LEVEL 6

GRADUATE DIPLOMA IN ELECTRONIC AND TELECOMMUNICATION ENGINEERING SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Three** “General Compulsory” plus **four** “Field Compulsory”
- Any **four** “Optional” units

To receive this award the learner must complete the following practical assignments –139, 612, 613, 617, 618, plus appropriate practical assignments for the chosen optional units (636).



QUALIFICATION STRUCTURE

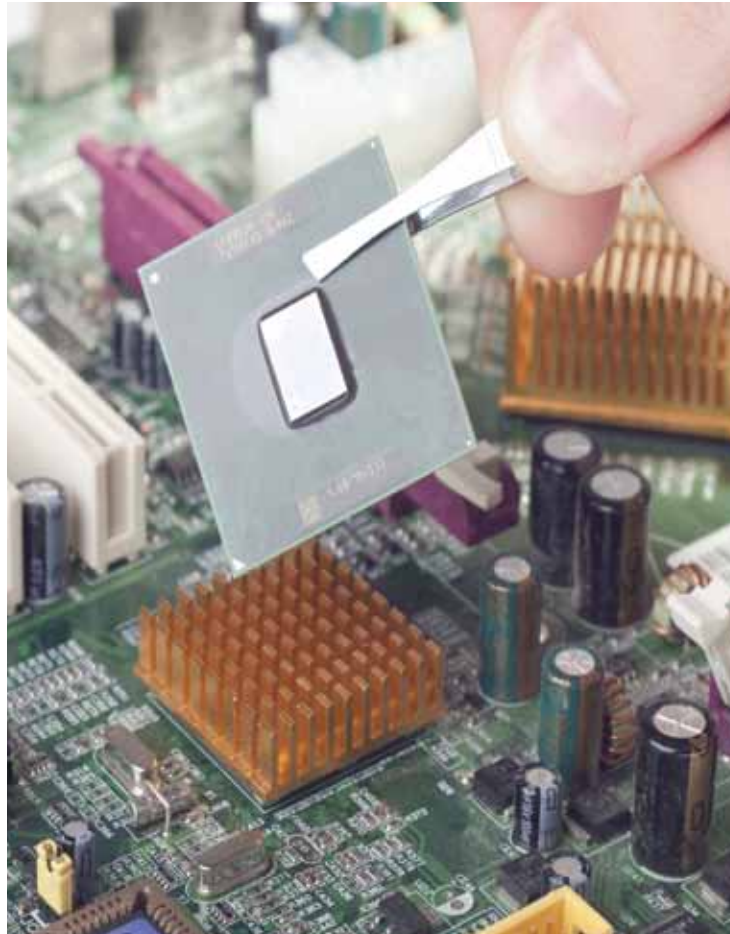
THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 100		Engineering Mathematics	General Compulsory
Unit 101		Management for Engineers	General Compulsory
Unit 112	612	Circuits and Waves	Field Compulsory
Unit 113	613	Electrical Machines and Electrical Energy system Fundamentals	Field Compulsory
Unit 117	617	Electronic Systems	Field Compulsory
Unit 118	618	Communication Systems	Field Compulsory
Unit 119		Wireless and Mobile Communication	Optional
Unit 121		Computer Networks	Optional
Unit 123		Computer Architecture and Operating Systems	Optional
Unit 125		Signals and Systems	Optional
Unit 127		Software Engineering	Optional
Unit 136	636	Control Systems	Optional
Unit 139		Project 1	General Compulsory

LEVEL 7 POST GRADUATE DIPLOMA IN ELECTRONIC AND TELECOMMUNICATION SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Two** “General Compulsory” plus **three** “Field Compulsory”
- Any **three** “Optional” units

To receive this award the candidate must complete the following practical assignments –229.



QUALIFICATION STRUCTURE

THEORY	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 200	Engineering Analysis	General Compulsory
Unit 212	Data Communication	Field Compulsory
Unit 213	Digital System Design	Field Compulsory
Unit 214	Telecommunication Systems Engineering	Field Compulsory
Unit 215	Modern Control Systems	Optional
Unit 216	RF and Microwave Engineering	Optional
Unit 217	Power Electronics	Optional
Unit 218	Internet Technologies	Optional
Unit 219	Computer System Engineering	Optional
Unit 229	Project 2	General Compulsory

LEVEL 6 GRADUATE DIPLOMA IN INFORMATION TECHNOLOGY SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Three** “General Compulsory” plus **four** “Field Compulsory”
- Any four “Optional” units

To receive this award the learner must complete the following practical assignments –139 plus appropriate practical assignments for the chosen optional units (636).



QUALIFICATION STRUCTURE

THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
		Engineering Mathematics	General Compulsory
		Management for Engineers	General Compulsory
		Wireless and Mobile Communication	Optional
		Computer Programming and Information Systems	Optional
		Computer Networks	Field Compulsory
		Web Design and Applications	Optional
		Computer Architecture and Operating Systems	Optional
		Database Management	Field compulsory
		Information Management	Field compulsory
		Software Engineering	Field compulsory
	636	Control Systems	Optional
		Project 1	General Compulsory

LEVEL 7

POST GRADUATE DIPLOMA IN INFORMATION TECHNOLOGY SPECIALISATION

To achieve the above qualification learners must successfully complete :

- **Two** “General Compulsory” plus **six** “Field Compulsory”

To receive this award the candidate must complete the following practical assignments –229.



QUALIFICATION STRUCTURE

THEORY	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION
Unit 200	Engineering Analysis	General Compulsory
Unit 211	Fields and Network Theory	Field Compulsory
Unit 212	Data Communication	Field Compulsory
Unit 214	Telecommunication Systems Engineering	Field Compulsory
Unit 216	RF and Microwave Engineering	Field Compulsory
Unit 218	Internet Technologies	Field Compulsory
Unit 219	Computer System Engineering	Field Compulsory
Unit 229	Project 2	General Compulsory

LEVEL 6 GRADUATE DIPLOMA IN MECHANICAL ENGINEERING

To achieve the above qualification learners must successfully complete :

- **Three** “General Compulsory” plus **four** “Field Compulsory”
- Any **four** “Optional” units

To receive this award the learner must complete the following practical assignments –139, 628-631 plus appropriate practical assignments for the chosen optional units (632, 634-637).



QUALIFICATION STRUCTURE

THEORY	PRACTICAL	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION	BARRED COMBINATIONS
Unit 100		Engineering Mathematics	General Compulsory	
Unit 101		Management for Engineers	General Compulsory	
Unit 128	628	Applied Thermodynamics	Field compulsory	
Unit 129	629	Fluid Mechanics	Field Compulsory	
Unit 130	630	Mechanics of Machines and Strength of Materials	Field Compulsory	
Unit 131	631	Materials	Field Compulsory	
Unit 132	632	Manufacturing Technology	Optional	Cannot be used if Unit 133 was chosen
Unit 133		Analysis and Design of Manufacturing Technology	Optional	Cannot be used if Unit 132 was chosen
Unit 134	634	Hydraulics and Hydraulic Machines	Optional	
Unit 135	635	Mechanics of Solids	Optional	
Unit 136	636	Control Systems	Optional	
Unit 137	637	Electro techniques	Optional	
Unit 138	636	Quality and Reliability Engineering	Optional	
Unit 139		Project 1	General Compulsory	

LEVEL 7

POST GRADUATE DIPLOMA IN MECHANICAL ENGINEERING

To achieve the above qualification learners must successfully complete :

- **Two** “General Compulsory” plus **three** - “Field Compulsory”
- Any **three** “Optional” units

To receive this award the candidate must complete the following practical assignments –229.



QUALIFICATION STRUCTURE

THEORY	UNIT TITLE	COMPULSORY/ OPTIONAL FOR FULL QUALIFICATION	BARRED COMBINATIONS
Unit 200	Engineering Analysis	General Compulsory	
Unit 220	Computational Mechanics Using FEM	Field compulsory	
Unit 221	Heat and Mass Transfer	Field compulsory	
Unit 222	Mechanical Engineering Design	Field Compulsory	
Unit 223	Mechatronics	Optional	
Unit 224	Dynamics of Mechanical Systems	Optional	
Unit 225	Advanced Manufacturing Technology	Optional	
Unit 226	Design and Operation of Marine Vehicles	Optional	Cannot be used if Unit 227 or 228 was chosen
Unit 227	Automobile Engineering	Optional	Cannot be used if Unit 226 or 228 was chosen
Unit 228	Aerospace Engineering	Optional	Cannot be used if Unit 226 or 227 was chosen
Unit 229	Project 2	General Compulsory	

ENGINEERING

QUALITY ASSURANCE FOR THE ASSESSMENT OF PRACTICAL SKILLS

Approved centres are responsible for assessment and internal verification/quality assurance whilst City & Guilds is responsible for external quality assurance.

The assessment criteria provided in the Qualification handbook must be rigorously followed, recorded and tracked through the centre's quality assurance procedures. A typical example would be the assessment of a learner carrying out a practical task.

Below is a brief overview of the responsibilities of the 3 key roles in the quality assurance of the assessment of practical skills. More information and guidance on assessment and internal verification can be found in the Centre Guide/ Manual – Delivering International Qualifications.

SUMMARY OF ASSESSMENT METHODS

- One written question paper for each unit
- A practical project.
- One practical assignment for chosen optional units

ASSESSMENT TYPES

- Dated entry exam
- Practical assignments/projects

ENGINEERING

QA ROLE

ASSESSOR

1. Plan the assessment
2. Discuss process with learner
3. Conduct the assessment
4. Observe learner performance
5. Record learner performance against assessment criteria
6. Feedback outcome

INTERNAL VERIFIER

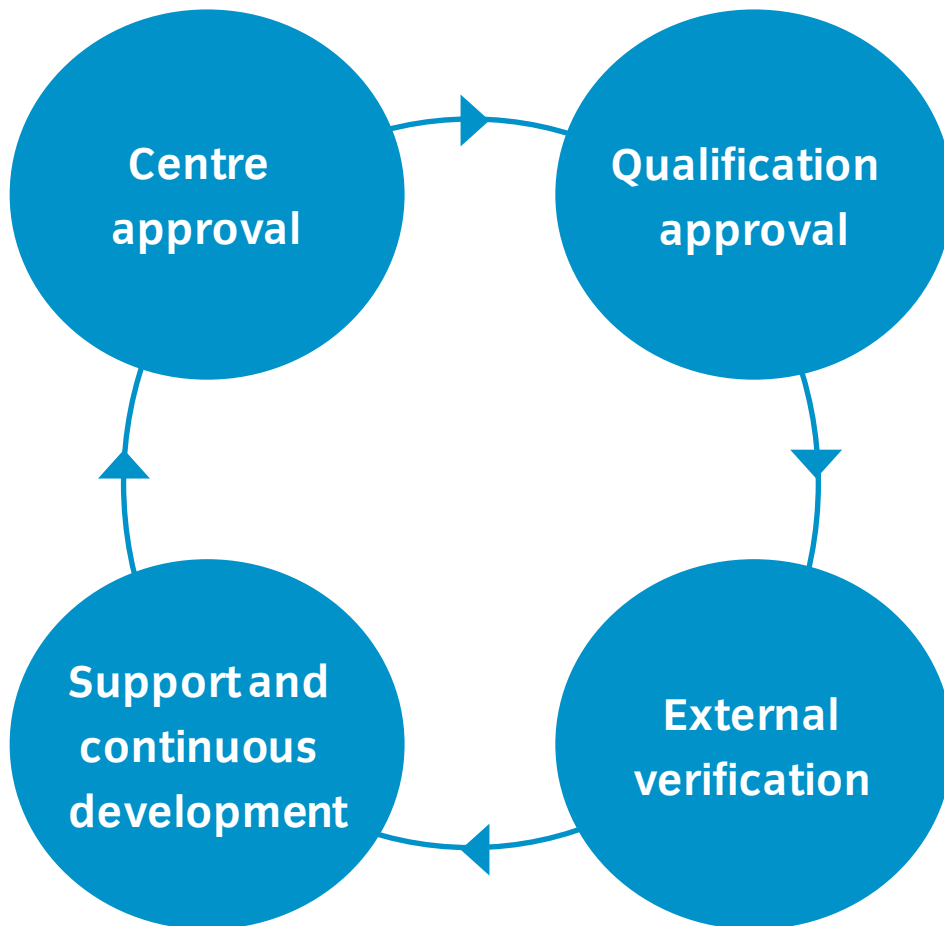
1. Discuss assessment strategy with assessor team
2. Maintain assessment sampling plan which covers all assessors
3. Observe assessment taking place
4. Feedback on performance to assessor
5. Guide where necessary
6. Ensure standard approach across assessor team

EXTERNAL VERIFIER

1. Plan external verification visit with relevant centre staff
2. Carry out visit, covering
 - Observation of candidate assessment
 - Check of records
 - Staff & learner interviews
 - Feedback and support
 - Action plan
3. Complete visit report
4. Make recommendation
5. Return report to local City & Guilds office

ENGINEERING

QUALIFICATION DELIVERY ONLY THROUGH APPROVED TRAINING CENTRES



ENGINEERING

RESOURCE REQUIREMENTS

- **Physical Resources and Site Agreements**

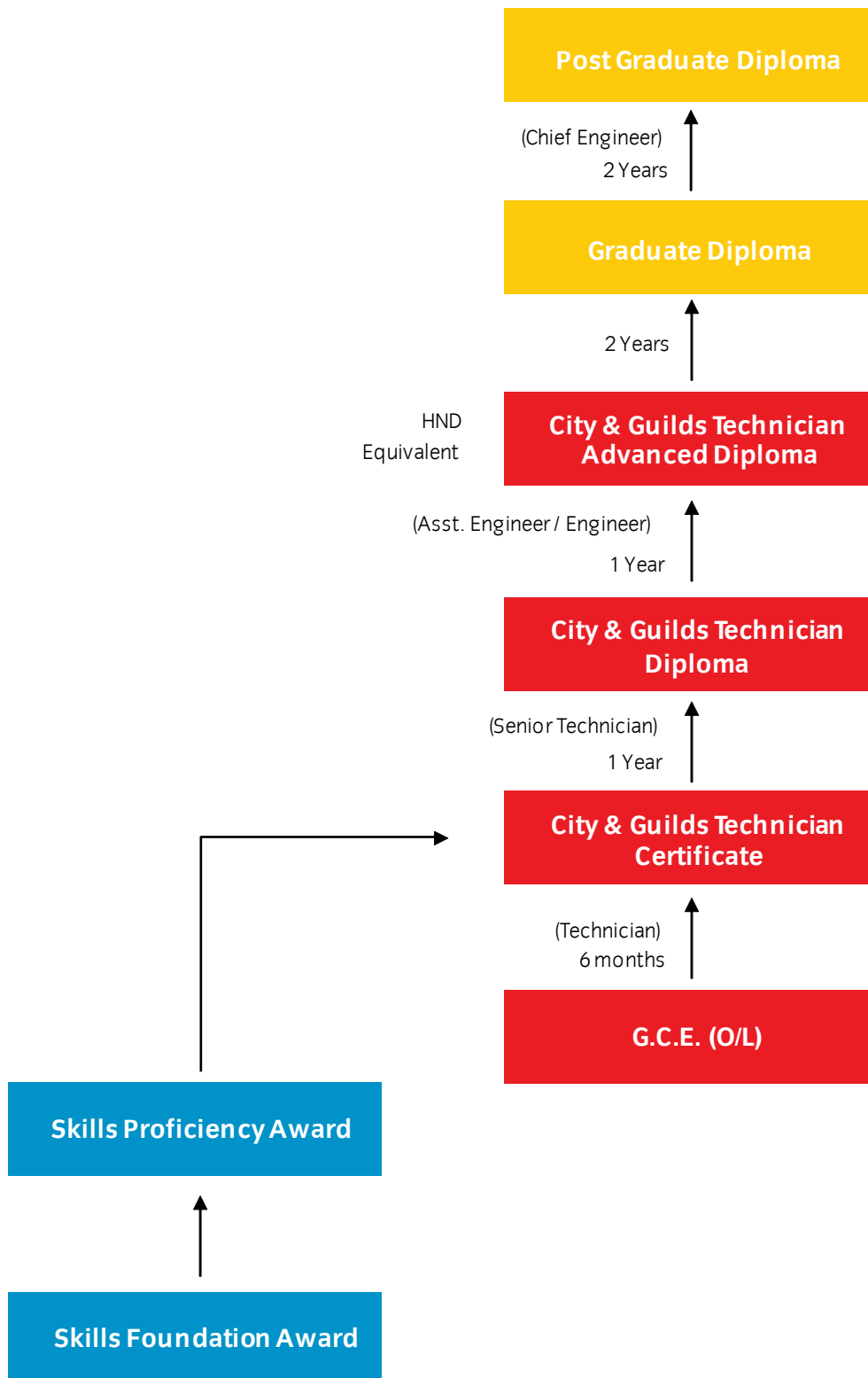
Centres need to ensure they have all the necessary equipment to carry out all parts of the qualification. If there are no facilities for realistic working environment, centres are advised to develop links with local industry to provide opportunities for hands on experience.

- **Human Resources**

- Be technically competent in the areas for which they are delivering training
- Have recent relevant experience in the specific area they will be assessing
- Have credible experience of providing training.

ENGINEERING

PROGRESSION ROUTE



ENGINEERING

PROGRESSION INTO PROFESSIONAL REGISTRATION

The City & Guilds Graduate and Post graduate Diplomas in Engineering have been developed to provide a flexible route to career success as a professional engineer.

City & Guilds is working with the UK'S leading professional institutions to ensure that the qualifications are aligned with the requirements for Incorporated Engineer [Graduate Diploma] and Chartered Engineer [Post Graduate Diploma] registration.

The register of Chartered Engineers [CEng] and Incorporated Engineers [IEng] is held by the Engineering Council, the UK regulatory body for the Engineering Profession. The Engineering Council sets and maintains the internationally recognised

standards of professional competence and ethics that govern the award and retention of these titles.

To become a professionally qualified, candidates must be a member of a licensed professional engineering institution, who will act as the awarding body for their registration. IET, IMechE and ICE are the three largest licensed professional engineering institutions in the UK, allowed to assess candidates for inclusion on their register of professional engineers.

ENGINEERING

THE INSTITUTE OF ENGINEERING AND TECHNOLOGY (IET)



www.theiet.org

Founded 140 years ago the IET is one of the world's leading professional societies for the engineering and technology community. The IET has more 150,000 members in 127 countries with active networks of members in 37 countries. To support its worldwide membership it has offices in Europe, North America and Asia Pacific.

IET's activities include membership and professional development, professional registration under licence from the Engineering Council publishing and events as well as government and stake holder engagement on engineering related policy issues. IET also produces independent authoritative fact files and briefings on key topics.

The Institution of Engineering and Technology (IET) welcomes applications from holders of the following City & Guilds qualifications:

- City & Guilds Graduate Diplomas for Incorporated Engineer (IEng) registration:
 - Graduate Diploma in Electrical Engineering
 - Graduate Diploma in Electronic and Telecommunication Engineering
 - Graduate Diploma in Information Technology.

- City & Guilds Postgraduate Diplomas for Chartered Engineer (CEng) registration:
 - Postgraduate Diploma in Electrical Engineering
 - Postgraduate Diploma in Electronic and Telecommunication Engineering
 - Postgraduate Diploma in Information Technology.

IET and City & Guilds are working together to ensure the qualifications are aligned with the registration requirements for incorporated Engineer (for the Graduate Diploma) and Chartered Engineer (for the Postgraduate Diploma).

ENGINEERING

INSTITUTE OF MECHANICAL ENGINEERING (IMECHE)



www.imeche.org

The Institute of Mechanical Engineers [IMechE] is the fastest growing professional engineering institution in the UK. IMechE has been at the heart of the world's most important and dynamic industries since its formation in 1847.

Today, the institution has over 100,000 members and is a market leader among professional engineering bodies.

It represents mechanical engineers in over 120 countries and the Institution is the largest network of mechanical engineering knowledge, skill and opportunity in the world.

IMechE is committed to ensuring that the views of engineers are well represented in the public domain and is an internationally recognised thought leader in the areas of energy, climate change and future transport.

The Institution of Mechanical Engineers (IMechE) welcomes applications from holders of the following City & Guilds qualifications:

- City & Guilds Graduate Diploma in Mechanical Engineering for Incorporated Engineer (IEng) registration
- City & Guilds Postgraduate Diploma in Mechanical Engineering for Chartered Engineer (CEng) registration.

IMechE and City & Guilds are working together to ensure the qualifications are aligned with the registration requirements for Incorporated Engineer (for the Graduate Diploma) and Chartered Engineer (for the Postgraduate Diploma), which will be considered individually by the Institution's Academic Assessment Committee.

ENGINEERING

INSTITUTE OF CIVIL ENGINEERING [ICE]



The Institution of Civil Engineering [ICE] was founded in 1818 and is dedicated to foster and promote the art and science of civil engineering. Today, the institution represents nearly 80,000 members worldwide. ICE is a qualifying body, a centre for the exchange of specialist knowledge in civil engineering, and a provider of resources to encourage, innovation and excellence in the profession worldwide.

The Institution of Civil Engineers (ICE) welcomes applications from holders of the following City & Guilds qualifications:

- City & Guilds Graduate Diploma in Civil Engineering for Incorporated Engineer (IEng) registration
- City & Guilds Postgraduate Diploma in Civil Engineering for Chartered Engineer (CEng) registration.

ICE and City & Guilds are working together to ensure the qualifications are aligned with the registration requirements for Incorporated Engineering (for the Graduate Diploma) and Chartered Engineer (for the Postgraduate Diploma), which will be considered individually by the Institution's Academic Qualifications Panel.

Our full range of qualifications can be found at
www.cityandguilds.com

For more information, or to arrange a consultation,
please contact your local office

**VOCATIONAL EXPERTS.
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EASY TO SWITCH.**

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City & Guilds

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