TGI APPRENTICESHIPS

Our Apprenticeship Programme

Electrotechnical Technology (Electrical)

Associated qualifications	City & Guilds Level 3 Diploma in Electrotechnical Technology (2357)
	City & Guilds Level 3 18th Edition Certificate (2382)
	City & Guilds Level 3 Inspection and Testing Certificate (2394)
	AM2
Duration	5 years

Off-the-job training, assessment and apprentice reviews:

This details what training the apprentice will receive, principally through qualification unit delivery with the learner outcomes attached. It also includes estimated assessment dates.

On-the-job support for learning, competency and behaviour:

This summarises the broad timetable of tasks that can take place in the workplace, where possible, to support the off-the-job training. It should focus on duties that include:
- Competencies - activities and practical tasks gained through on-the-job exercises with opportunities to practise
- Behaviours - actions, attitudes and beliefs embedded through the employer's organisational code of conduct

Key:

Training to be delivered

Assessments ←

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
Year 1		
	Understanding Health and Safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment) (Unit 601) *Outcomes:* Understand: - how relevant Health and Safety legislation applies in the workplace - the procedures for dealing with Health and Safety in the work environment - the procedures for establishing a safe working environment - the requirements for identifying and dealing with hazards in the work environment	**Year 1.** - Observe Health and Safety requirements - Look out for risks and hazards in the work area (Dependent on learner & Employer) **Year 2.** - Ensuring the Health and Safety of themselves and work colleagues (Dependent on learner & Employer)
	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems (Unit 606) *Outcomes:* Understand the: - principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations - regulatory requirements and procedures for terminating and connecting conductors, cables and flexible cords in electrical wiring systems and equipment - procedures and applications of different methods of terminating and connecting conductors, cables, and flexible cords in electrical wiring systems and equipment	**Year 1.** - Learning to strip and terminate Flat T&E/ Flexible cables - Marking out, cutting and chasing walls putting up boxes. - Pulling in cables as instructed **Year 2.** Learning to strip and terminate SWA, FP cables. Marking out, cutting and chasing walls putting up boxes. Running in Radial and Ring Power circuits. **Year 3.** - Be able to correctly wire 2-way and intermediate switching. - Sizing cables for a given load. - Installing various types of wiring system (trunking, conduit, cable tray)
	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems (Unit 609) *Outcomes:* Understand: - mathematical principles which are appropriate to electrical installation, maintenance and design work - standard units of measurement used in electrical installation, maintenance and design work - basic mechanics and the relationship between force, work, energy and	**Year 1.** - Measuring areas of rooms - Calculating power and current requirements - Understand and apply basic calculations involving Ohm's Law

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	power - the relationship between resistance, resistivity, voltage, current and power - the fundamental principles which underpin the relationship between magnetism and electricity	
	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems (Unit 609) Multiple choice test	
Year 2		
	Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment (Unit 604) *Outcomes:* Understand the: - characteristics and applications of consumer supply systems - principles of internal and external earthing arrangements for electrical installations for buildings, structures and the environment - principles for selecting cables and circuit protection devices - principles and procedures for selecting wiring systems, equipment and enclosures	**Year 2.** - Identifying different earthing systems - Identify overload and fault protection devices used within an installation - Sizing cables for a given load **Year 3.** - Understand how to apply diversity factors to a circuit. - Knowledge of how de-rating factors affect current carrying capacity and therefore the size of a cable.
	Understanding Health and Safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment) (Unit 601) Written assignment	
	Understanding Health and Safety legislation, practices and procedures (installing and maintaining electrotechnical systems and equipment) (Unit 601) On-line test	
	Understanding the practices and procedures for overseeing and organising the work environment (Unit 603) *Outcomes:* Understand the: - types of technical and functional information that is available for the installation of electrotechnical systems and equipment - procedures for supplying technical and functional information to relevant people	**Year 2.** - Observing site processes and procedures - Working to bar charts and schedules on-site - Be able to understand and work to technical information used in the electrotechnical industry. - Confidently liaise with other site operatives from the construction industry

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	- requirements for overseeing Health and Safety in the work environment - requirements for liaising with others when organising and overseeing work activities - requirements for organising and overseeing work programmes - requirements for organising the provision and storage of resources that are required for work activities	
	Understanding the practices and procedures for overseeing and organising the work environment (Unit 603) Written assignment	
	Understanding the practices and procedures for overseeing and organising the work environment (Unit 603) Written Exam	
	Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment (Unit 604) Written assignment	
Year 3		
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) *Outcomes:* Understand the: - procedures, practices and statutory and non-statutory regulatory requirements for preparing work sites for the installation of wiring systems and associated equipment - procedures for checking the work location prior to the commencement of work activities - practices, procedures and regulatory requirements for completing the safe isolation of electrical circuits and complete electrical installations - types, applications and limitations of wiring systems and associated equipment - procedures for selecting and using, tools, equipment and fixings for the installation of wiring systems, associated equipment and enclosures - practices and procedures for installing wiring systems, associated	**Year 3.** - Underpinning knowledge and be able to carry out the safe isolation process prior to working on electrical equipment. - Understanding the apps and limitations of various wiring systems - Selecting and inspecting the tools needed for a given task - Understand the regulatory requirements of various power, lighting, standby systems

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	equipment and enclosures - Know the regulatory requirements which apply to the installation of wiring systems, associated equipment and enclosures	
	Understanding the principles, practices and legislation for the termination and connection of conductors, cables and cords in electrical systems (Unit 606) Written assignment Practical Assignment	
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) Written Exam	
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) Common Task	
	Understanding the principles of planning and selection for the installation of electrotechnical equipment and systems in buildings, structures and the environment (Unit 604) Written exam	
	Applying Health and Safety legislation and working practices (Unit 311) *Outcomes:* Be able to: - apply relevant Health and Safety legislation in the workplace - assess the work environment for hazards and identify remedial actions in accordance with Health and Safety legislation - apply methods and procedures to ensure work on site is in accordance with Health and Safety legislation - apply procedures to deal with and report Health and Safety in accordance with Health and Safety legislation	**Year 3.** - Designing Risk Assessment templates - Utilising experience on construction sites to inform Risk assessment and find control measures for hazards found **Year 4.** - Begin gathering evidence of H&S issues onsite **Year 5.** - Application of H&S legislation onsite - Working to Industry standard H&S within the workplace
	Overseeing and organising the work environment (Unit 313) *Outcomes:* Be able to: - provide relevant people with technical and functional information for work on electrical systems and equipment - oversee Health and Safety during work on electrical systems and	**Year 3.** - Designing Gant Chart - Critical Path Analysis templates **Year 4.** - Begin gathering evidence of working/liaising with other trades in an installation

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	equipment - co-ordinate liaison with other relevant persons during work activities - organise and oversee work activities and operations - organise a programme for working on electrical systems and equipment - organise the resource requirements for work on electrical systems and equipment	- Begin gathering evidence of working to a planned schedule as part of a safe system of work **Year 5.** - Working/liaising with other trades in an installation environment - Working to a planned schedule as part of a safe system of work - Working with and instructing site operatives in the electrotechnical industry - Working within risk assessment and method statements and other technical guidance within an electrical installation
	Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (Unit 315) *Outcomes:* Be able to: - prepare the working environment for the installation of wiring systems, enclosures and associated equipment - correctly interpret appropriate information for the installation of wiring systems, enclosures and associated equipment - confirm that planned work is in accordance with the installation specification - confirm the electrical supply is in accordance with the installation specification - measure and mark-out the fixing and fitting locations for wiring systems, wiring-enclosures and equipment in accordance with current relevant statutory and non-statutory regulations - fit and fix wiring systems, wiring enclosures and associated equipment safely in accordance with the installation specification - confirm any variations to the installation specification or planned programme of work	**Year 3.** - Designing Gant Chart - Critical Path Analysis templates - Designing Method statement templates for given installation tasks **Year 4.** - Begin gathering evidence of working/liaising with other trades in an installation - Begin gathering evidence of working to a planned schedule as part of a safe system of work **Year 5.** - Working with and liaising with other trades in an installation - Working to a planned schedule as part of a safe system of work - Working within risk assessment and method statements and other technical guidance within an electrical installation. - Installing wiring systems to Industry standards - Carrying out a Pre-work survey on an installation - Install electrotechnical equipment to industry standards
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) Online Exam	
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605)	

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	Written Assignment	
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) Written assignment	
Year 4		
	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment (Unit 607) *Outcomes*: Understand the: - principles, regulatory requirements and procedures for completing the safe isolation of an electrical circuit and complete electrical installations in preparation for inspection, testing and commissioning - principles and regulatory requirements for inspecting, testing and commissioning electrical systems, equipment and components - regulatory requirements and procedures for completing the inspection of electrical installations - regulatory requirements and procedures for the safe testing and commissioning of electrical installations - procedures and requirements for the completion of electrical installation certificates and related documentation	**Year 4.** - Underpinning knowledge and be able to carry out the safe isolation process prior to working on electrical equipment. - Carry out Continuity testing on a given circuit - Carry out Ring-Final Circuit testing on a given circuit - Carry out an Insulation Resistance test on a given circuit and installation - Carry out a Polarity test on a given circuit - Carry out an Earth-fault Loop Impedance test on a given circuit - Carry out a test to ascertain Ze and PFC at the origin of an installation - Fill out an EIC, Schedule of inspections, Schedule of test results
	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment (Unit 607) Practical assignment	
	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment (Unit 607) Written assignment	
	Applying environmental legislation, working practices and the principles of environmental technology systems (Unit 312) *Outcomes:* Be able to:	**Year 4.** - Begin gathering evidence of the application of environmental technologies in an installation **Year 5.**

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	- apply environmental legislation, working practices and principles for electrotechnical services - apply work methods and procedures to reduce material wastage and the impact of work activities on the work environment - supply information on environmental technology systems in the work location	- Discussing the advantages and limitations of various environmental technologies in an installation. Stating where they can best be applied to a given installation
	Terminating and connecting conductors, cables and flexible cords in electrical systems (Unit 316) *Outcomes:* Be able to: - confirm safety of system prior to completion of any termination and connection in accordance with statutory and non-statutory regulations - terminate and connect conductors, cables and flexible cords in electrical wiring systems and equipment - confirm that terminations and connections are safe and free from defects in accordance with statutory and non-statutory regulations	**Year 4.** - Gathering evidence of terminating various conductors in the workplace environment **Year 5.** - Terminating various types of cables to industry standard - Terminating various types of electrotechnical accessories to industry standard - Terminating conductors using the various methods (solder, compression, screw & non-screw compression) to industry standard
	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (Unit 317) *Outcomes:* Be able to: - confirm safety of the system and equipment prior to completion of inspection, testing and commissioning in accordance with statutory and non-statutory regulations - inspect electrotechnical systems and equipment - test electrotechnical systems and equipment - commission electrotechnical systems and equipment	**Year 4.** - Beginning to practice and gather evidence of the inspection and testing process. - Beginning to complete an EIC, Schedule of inspections, Schedule of test results as part of the inspection and testing process. **Year 5.** - Carrying out safe isolation on an installation to industry standard - Carry out Continuity testing on a given circuit to industry standard - Carry out Ring-Final Circuit testing on a given circuit to industry standard - Carry out an Insulation Resistance test on a given circuit and installation to industry standard - Carry out a Polarity test on a given circuit to industry standard - Carry out an Earth-fault Loop Impedance test on a given circuit to industry standard

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
		- Carry out a test to ascertain Ze and PFC at the origin of an installation to industry standard - Accurately complete an EIC, Schedule of inspections, Schedule of test results to industry standard - Be able to verify test results using IET GN3 & BS7671 to industry standard
	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (Unit 318) *Outcomes:* Be able to - confirm safety of the system and equipment prior to diagnosing and correcting electrical faults in accordance with statutory and non-statutory regulations - carry out procedures to identify faults on electrical systems and equipment - correct faults on electrical systems and equipment	**Year 4.** - Beginning to practice and gather evidence of the fault finding process. - Beginning to complete MWEIC as part of the fault finding and rectification process. **Year 5.** - Carry out Continuity testing on a given circuit to locate a fault to industry standard - Carry out an Insulation Resistance test on a given circuit and installation to locate a fault to industry standard - Carry out a Polarity test on a given circuit to locate a fault to industry standard - Describe a logical sequence to locate and correctly repair a fault - Describe the type of fault located (Short circuit, transient voltage, component fault) - Be able to verify test results using IET GN3 & BS7671 to industry standard - Accurately complete a MWEIC as part of the fault finding and rectification process
	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems (Unit 609) Cont'd *Outcomes:* Understand: - the fundamental principles which underpin the relationship between magnetism and electricity - electrical supply and distribution systems - how different electrical properties can effect electrical circuits, systems and equipment	**Year 4.** - Understand and apply the various scientific principles that apply to the electrical installation process

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	- the operating principles and applications of DC machines and AC motors - the operating principles of different electrical components - the principles and applications of electrical lighting systems - the principles and applications of electrical heating - the types, applications and limitations of electronic components in electrotechnical systems and equipment	
	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems (Unit 609) Written Exam	
	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment (Unit 608) *Outcomes:* Understand: - the principles, regulatory requirements and procedures for completing the safe isolation of electrical circuits and complete electrical installations - how to complete the reporting and recording of electrical fault diagnosis and correction work - how to complete the preparatory work prior to fault diagnosis and correction work - the procedures and techniques for diagnosing electrical faults - the procedures and techniques for correcting electrical faults	**Year 4.** - Underpinning knowledge and be able to carry out the safe isolation process prior to working on electrical equipment. - Carry out Continuity testing on a given circuit to locate a fault - Carry out Ring-Final Circuit testing on a given circuit to locate a fault - Carry out an Insulation Resistance test on a given circuit and installation to locate a fault - Carry out a Polarity test on a given circuit to locate a fault - Describe a logical sequence to locate and correctly repair a fault
	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment (Unit 608) Practical assignment	
	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment (Unit 608) Written assignment	
	Understanding the principles, practices and legislation for diagnosing and correcting electrical faults in electrotechnical systems and equipment in buildings, structures and the environment (Unit 608) Written assignments (x2)	

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment (Unit 607) Written Exam	
	Understanding principles, practices and legislation for the inspection, testing, commissioning and certification of electrotechnical systems and equipment in buildings, structures and the environment (Unit 607) On-line multiple choice test	
	Understanding the electrical principles associated with the design, building, installation and maintenance of electrical equipment and systems (Unit 609) Written Exam	
Year 5		
	Understanding environmental legislation, working practices and the principles of environmental technology systems (Unit 602) *Outcomes:* Understand: - the environmental legislation, working practices and principles which are relevant to work activities - how work methods and procedures can reduce material wastage and impact on the environment - how and where environmental technology systems can be applied	**Year 5.** - Understand where and how different environmental technologies can be applied in a domestic installation.
	Applying Health and Safety legislation and working practices (Unit 311) Practical observation	
	Applying Health and Safety legislation and working practices (Unit 311) Workplace portfolio of evidence assessment	
	Applying environmental legislation, working practices and the principles of environmental technology systems (Unit 312) Practical observation	
	Applying environmental legislation, working practices and the principles of environmental technology systems (Unit 312) Workplace portfolio of evidence assessment	
	Overseeing and organising the work environment (Unit 313) Practical observation	
	Overseeing and organising the work environment (Unit 313) Workplace portfolio of evidence assessment	

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (Unit 315) Practical observation	
	Planning, preparing and installing wiring systems and associated equipment in buildings, structures and the environment (Unit 315) Workplace portfolio of evidence assessment	
	Terminating and connecting conductors, cables and flexible cords in electrical systems (Unit 316) Practical observation	
	Terminating and connecting conductors, cables and flexible cords in electrical systems (Unit 316) Workplace portfolio of evidence assessment	
	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (Unit 317) Practical observation	
	Inspecting, testing, commissioning and certifying electrotechnical systems and equipment in buildings, structures and the environment (Unit 317) Workplace portfolio of evidence assessment	
	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (Unit 318) Practical observation	
	Diagnosing and correcting electrical faults in electrical systems and equipment in buildings, structures and the environment (Unit 318) Workplace portfolio of evidence assessment	
	Understanding environmental legislation, working practices and the principles of environmental technology systems (Unit 602) Written assignment	
	Understanding environmental legislation, working practices and the principles of environmental technology systems (Unit 602) Online multiple-choice test	
	City & Guilds Level 3 Award in Requirements for Electrical Installations BS 7671: 2018 Mock Exam Papers x 8 Gives the learner an understanding of the full content of BS 7671, and how this applies to electrical installations within its scope.	
	Understanding the practices and procedures for the preparation and installation of wiring systems and electrotechnical equipment in buildings, structures and the environment (Unit 605) 18th Edition multiple-choice test	
	Electrotechnical occupational competence (Unit 399) *Outcomes:*	**Year 5.**

	Off-the-job training, assessment and apprentice reviews	On-the-job support for learning, competency and behaviour
	Be able to: - interpret specifications, drawings and diagrams - undertake risk assessments - carry out the safe isolation of electrical circuits and complete electrical installations - plan and prepare to install, terminate and connect wiring systems - complete the installation, termination and connection of wiring systems in accordance with industry requirements - complete the visual inspection, initial verification and certification of an electrical installation - complete the testing and certification of an electrical installation in accordance with industry requirements - diagnose, and recommend how to rectify, electrical faults in an electrical installation in accordance with industry requirements	Learners to be able to undertake specific electrical tasks within an exam based scenario:- - Risk Assessment - Safe Isolation - TP+N Installation/Build - Full Inspect/test + certification of the build - Fault Finding Rig - Online Theory Exam
	Electrotechnical occupational competence (Unit 399) AM2 Test 3-day Examination in Southampton	
End	**Successful completion of the attached qualifications**	