Adult Learning Improvement Network

EDUCATION & TRAINING FOUNDATION

Exploring Careers Through **Technical** Routes

Electrician

The Industry

An electrician installs, tests and maintains electrical wiring, equipment, appliances, apparatus and fixtures.

Tasks depend on the type of electrician and their work:

- Installation, installing power systems, lighting, fire protection, security and data-network systems
- Maintenance, testing and maintaining systems to make sure they are working efficiently and safely
- Electro technical panel builder, making and installing control panels to operate the electrical systems inside buildings
- Machine repair and rewind, fixing and maintaining electrical motors and transformers
- Highway systems, installing and maintaining street lighting and traffic management systems
- Production, constructing complex electrical and electronic appliances from wiring diagrams.

The Electrotechnical Skills Partnership http://www.the-esp.org.uk
Electrical Careers http://electricalcareers.co.uk
The Electrical Contractors' Association www.eca.co.uk
Joint Industry Board (JIB) http://www.jib.org.uk

Skills and Requirements

Electricians need technical knowledge and practical skills to carry out work safely and be compliant with wiring and building regulations. You also need to:

- Be hardworking, dedicated and work well under pressure
- Understand installation skills, electrical diagrams and health and safety instructions
- Accurately follow detailed instructions, technical drawings, building plans and wiring diagrams
- Be flexible and adopt a methodical approach to working
- Have the ability to think quickly and problem solve
- Deliver clear verbal communication
- Have good interpersonal skills to work well with other trades
- Be good at administration, writing tenders, quotations or documentation
- Have strong physical fitness and manual dexterity
- Be willing to work in cramped spaces, have a head for heights and work in all sorts of weather
- Have an analytical and mathematical mind

'There are currently around 20,000 electrical contracting companies in the UK employing around 365,000 people and supporting 8,000 apprentices.'
Sources: https://www.totaljobs.com; https://www.goconstruct.org

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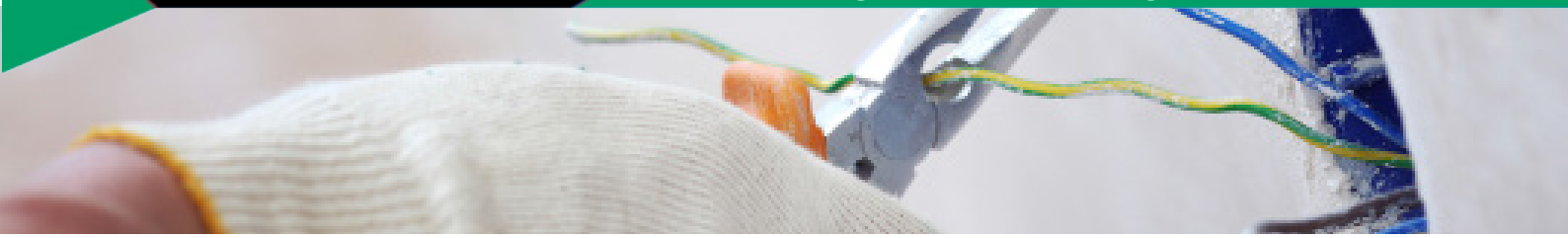
Working and Learning as an Electrician



Job Roles & Progression

Study Programme
Levels 2 and 3
Electrical Installations.

Further study
Level 3
Electrical or Electro-technical qualification
(complete this while in a job).
Electrotechnical Certification Scheme competence card - this allows you to work at any industrial or domestic site.
BEng (Hons)
Electrical and Electronic Engineering.

Apprenticeships
An apprenticeship scheme is the most common route to becoming a qualified electrician.
Advanced
Electrical Installation.

Career roles
Electrical Supervisor.
Electrical Engineer.
Design Engineer.
Master Electrician.
Site or project manager.
Consultancy work or training.
Set up your own business.
Estimator.
Building Services Engineer.

Calculation including problem solving

Tasks	Links to GCSE Maths
1. Calculate the total electrical load in an apartment.	1. **Number** (whole numbers - addition, multiplication). **Algebra** (algebraic formulae - formula).
2. Calculate the cable required to connect a series of downlighters to the power supply in a house extension.	2. **Number** (whole numbers - addition, multiplication). **Geometry and measure** (units of measure - units of length).
3. Check for voltage drop in the electrical lighting circuit to ensure use of the correct conductor.	3. **Algebra** (algebraic formulae - formula). **Problem solving** (solving algebraic problems).
4. Calculate the total amount for a wiring job to be charged.	4. **Geometry and measure (**units of measure - units of pricing).
5. Plan the layout and installation of electrical wiring based on a specification.	5. **Number** (addition, subtraction). **Ratio, proportion and rates of change** (ratio in context - scale factors).

Communication, all forms

Tasks	Links to GCSE English Language
1. Read an electrical code specification to understand the layout of a commercial electrical equipment installation.	1. **Analysing non-fiction** (responding to a non-fiction text - analyse an extract, understand the questions).
2. Work with others to repair the electrical wiring in a factory.	2. **Spoken language** (speaking and listening - audience and purpose, discussion skills).
3. Complete reporting documents accurately to ensure they are legible and understandable.	3. **Writing** (writing non-fiction - writing records; planning - editing and proofreading; organising information - sentence structures; literary techniques - informative language).
4. Provide feedback to a line manager on issues related to tasks completed by your team.	4. **Spoken language** (speaking and listening - audience and purpose, individual presentation; personal presence - eye contact, posture; voice - pitch and volume).
5. Prepare a quotation for installing a hard wired cooker.	5. **Writing** (writing non-fiction - a quotation; planning - flow chart, proofreading; literary techniques - persuasive language; vocabulary - use precise verbs).