

# National Apprenticeship - Occupational Profile

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## Craft Occupation

Electrical Instrumentation

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## Industry Served

Construction, manufacturing and services industries

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## Profile of Craft

The Electrical Instrumentation craftsperson is concerned with the installation, commissioning, testing and maintenance of: -electrical wiring systems and services; electrical plant and control equipment; process monitoring and control systems.

Modern process plant includes electrical, electro-mechanical, electro-pneumatic, electronic and microprocessor based systems. In order to function effectively and efficiently, the Electrical/Instrumentation craftsperson must have a broad base of technical knowledge complementary to information gathering and analytical skills.

The ability to interpret technical data and the proper use of test instruments is critical for effective system maintenance, fault diagnosis and rectification and the installation/calibration of sensors, transmitting and controlling devices.

This craftsperson must maintain effective communication with colleagues, clients and equipment suppliers. Proper maintenance, and updating of job-related and equipment-related documentation is critical. All work undertaken by Electrical Instrumentation craftspersons is subject to statutory regulations governing the safety of personnel, plant, premises and the environment.

At the end of the apprenticeship, the craftsperson will be able to demonstrate competence in the following skills:

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## Core Skills

- Selection, procurement, safe use of, and storage of craft-related tools, equipment and materials
  - Selection and utilisation of fixing devices
  - Assessment, interpretation and implementation of ETCI wiring regulations, installation inspection and testing procedures
  - Utilisation of electrical test instruments
  - Installation of steel conduit wiring systems
  - Installation of plastic conduit wiring systems
  - Installation of steel trunking cable systems
  - Installation of plastic trunking cable systems
  - Installation of cable tray and ladder systems
  - Installation of industrial cable systems
  - Installation of sub-distribution boards and protective devices
  - Installation and maintenance of lighting, heating and motive power systems and controls
  - Installation and testing of overcurrent and earth leakage protection systems
  - Installation of earthing and bonding systems
  - Interpretation of circuit schematics and architectural drawings which incorporate IEC symbols
  - Interpretation of technical data and manufacturing standards
  - Interpretation of equipment assembly, disassembly and adjustment procedures
  - Completion and updating of job-related documentation
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### Specialist Skills

- Installation of wiring systems and equipment in hazardous environments
- Assembly and wiring of main distribution boards
- Assembly and wiring of motor control panels
- Installation of door entry/exit systems
- Installation and maintenance of emergency lighting systems
- Installation and maintenance of fire alarm systems
- Installation and maintenance of intruder alarm systems
- Installation and maintenance of standby power and battery systems
- Installation of lightning protection systems
- Installation and maintenance of MV transformers and switchgear
- Installation of metering systems
- Installation of power factor correction systems

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### Common Skills

- System fault analysis skills
- Interpretation of electrical/electronic schematic diagrams
- Interpretation of flow, function and ladder charts
- Soldering and desoldering skills
- Testing, removal and replacement of electronic components/PCBs
- Installation and programming of PLC systems
- Installation and calibration of sensors and transducers
- Installation of electro-pneumatic systems
- Installation of data communication cable systems

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### Personal Skills

- Analytical ability
- Communications
- Customer relations
- Adaptability
- Ability to work as part of a team
- Ability to work independently
- Initiative and Adaptability
- Problem solving
- Planning
- Information gathering
- Quality Assurance
- Report Writing
- Safety

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**NOTE: Integrated curriculum includes maths, science, theory, drawing and computer applications**

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