

Apprenticeships +

Maintenance  
and Operations  
Engineering Technician  
(Electrical)

Apprenticeship  
Level 3





## Quick Information

### New Apprenticeship Standard designed by employers for employers

#### Sector

Engineering and manufacturing

#### Who is it for?

New or existing employees

#### Start date

September (other dates may be available depending on current capacity)

#### Level

Level 3

#### Duration

Typically 36 - 42 months

#### How does it work?

An apprentice will complete 12 months foundation training before moving onto a Level 3 Development Knowledge qualification which requires one day a week attendance at college.

#### Content

Foundation skills building training in the workshop. Level 3 in Advanced Manufacturing Engineering (Development Knowledge)

#### Assessment

You will be assessed on-going during your time at college, foundation skills is very practical. The Level 3 AME qualification is assignment based and will require time away from college.

#### Qualification

Apprentices must achieve level 2 English and mathematics prior to taking the end-point assessment for the apprenticeship if they haven't achieved them on entry.

#### Additional qualifications

Level 3 in Advanced Manufacturing Engineering (Development Knowledge)

#### Review

This standard will initially be reviewed 3 years after publication.

## Maintenance and Operations Engineering Technician (Electrical)

Maintaining the safety, integrity and effective operation of plant and equipment in industries that are part of the national infrastructure engineering sector, such as electricity generating, oil and gas refining and pharmaceuticals

Maintenance & Operations Engineering Technicians covers 7 roles: Electrical Technicians; Mechanical Technicians; Control & Instrumentation Technicians; Wind Turbine Technicians Electrical System and Process Control Technicians; Electromechanical Technicians and Plant Operations Technicians. They will maintain the safety, integrity and effective operation of plant and equipment in one or more of the following Industries that are part of or have activities that are part of the broader national infrastructure Engineering Sector: the electricity generating environment, which may use a range of different fuels including coal, gas, nuclear, wind and other renewable sources; telecommunications power plants; oil and gas refining; nuclear waste reprocessing; processing and production of chemicals; pharmaceuticals; human and animal food; cosmetics; petrochemicals; sewerage and the exploration and exploitation of oil and gas.

Electrical/Mechanical/Control and Instrumentation/Wind Turbine Technicians will work on various types of plant and equipment commonly found throughout the Engineering Industry sectors and the Technicians can be expected to migrate through these sectors during the course of their careers. Dependent upon the sector that they are employed in there may be subtle differences in terms of the composition and application of the plant and equipment. However, the fundamental principles of operation will be the same regardless of the engineering sector.

To support the business and operational requirements of modern integrated engineered production plant and services, Electrical Systems and Process Control Technicians and Electromechanical Technicians will need to apply a range of conventional skills and knowledge to undertake engineering activities on a selection of electromechanical and process control plant, systems and equipment.



### Key Areas of Study

Health and Safety, engineering principles and theories, wiring and testing procedures, engineering project and engineering mathematics

These Technicians will undertake installation, testing, servicing, removal, replacement, maintenance and repair of a range of equipment, sometimes complex, as part of planned preventative and reactive maintenance programmes. They may also undertake decommissioning activities when plant is being removed from service.

Plant Operation Technicians will undertake the safe and efficient operation of complex integrated energy conversion and production plant and systems. These activities could include plant commissioning, isolation and testing, plant preparation, plant start-up and shut down, monitoring and controlling plant and dealing with critical operational problems.

They will be responsible for the quality of their own work, possibly others' and ensuring the work is completed safely, meets stakeholder quality, time and budget requirements, whilst maintaining the efficient running of plant and equipment.

### Core Knowledge:

A Technician will understand:

- first principles relating to the operation and maintenance of appropriate plant and equipment
- relevant industry health and safety standards, regulations, and environmental and regulatory requirements
- maintenance and operational practices, processes and procedures covering a range of plant and equipment
- the relevant engineering theories and principles relative to their occupation

### Core Skills:

A Technician will apply their knowledge of plant and systems to safely perform maintenance and operational activities with minimum supervision. This will require them to:

- comply with industry health, safety and environmental working practices and regulations
- locate, and rectify faults on plant and equipment
- communicate with and provide information to stakeholders in line with personal role and responsibilities
- read, understand and interpret information and work in

compliance with technical specifications and supporting documentation

- prepare work areas to undertake work related activities and reinstate those areas after the completion of the work related activities
- inspect and maintain appropriate plant and equipment to meet operational requirements
- assess and test the performance and condition of plant and equipment
- communicate, handover and confirm that the appropriate engineering process has been completed to specification

### Core Behaviours

- **Health & Safety** – follows health & safety policies and procedures and be prepared to challenge unsafe behaviour using appropriate techniques to ensure the protection of people and property when working alone and/or with appropriate supervision
- **Quality focused** – ensures that work achieves quality standard both occupationally and personally
- **Working with others** – works well with people from different disciplines, backgrounds and expertise to accomplish an activity safely and on time
- **Interpersonal skills** – gets along well with others and takes into account their needs and concerns
- **Critical reasoning** – uses resources, techniques and obtained facts to develop sound solutions while recognising and defining problems
- **Sustainability and ethical behaviour** – behaves ethically and undertakes work in a way that contributes to sustainable development
- **Risk awareness** – demonstrates high concentration, the desire to reduce risks, ability to be compliant and awareness of change, through regular monitoring and checking of information

### Specialist roles

In addition an Electrical Technician will:

- position, assemble, install and dismantle electrical plant and equipment, which will include motors, switchgear, cables & conductors, to agreed specifications
- carry out planned, unplanned and preventative maintenance procedures on electrical plant and equipment.
- replace, repair and/or remove components in electrical plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in electrical plant and equipment

In addition a Mechanical Technician will:

- position, assemble, install and dismantle mechanical plant and equipment which will include pumps, valves, gearboxes, pipework, to agreed specifications
- carry out planned, unplanned and preventative maintenance procedures on mechanical plant and

equipment.

- replace, repair and/or remove components in mechanical plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in mechanical plant and equipment

In addition a Control & Instrumentation Technician will:

- position, assemble, install and dismantle plant and equipment which will include instrumentation and control of temperature, pressure and flow systems to agree specifications
- carry out planned, unplanned and preventative maintenance procedures on plant and equipment.
- replace, repair and/or remove components in plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in plant and equipment
- calibrate and configure instrument and control systems

In addition a Wind Turbine Technician will be able to:

- install, assemble and dismantle wind turbine plant and equipment, which will include pitch systems, yaw systems, switchgear, control systems to agreed specifications
- carry out planned, unplanned and preventative maintenance procedures on wind turbine plant and equipment including mechanical drive systems
- replace, repair and/or remove components in wind turbine plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults in wind turbine plant and equipment

In addition an Electrical System and Process Control Technician will:

- position, assemble, install and dismantle integrated electrical apparatus, systems and process control equipment
- carry out planned, unplanned and preventative maintenance procedures on integrated plant and equipment.
- replace, repair and/or remove components within integrated plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults within integrated plant and equipment
- calibrate and configure integrated electrical apparatus, systems and process control equipment

In addition an Electromechanical Technician will:

- position, assemble, install and dismantle integrated electromechanical power and control systems
- carry out planned, unplanned and preventative maintenance procedures on integrated plant and

equipment.

- replace, repair and/or remove components within integrated plant and equipment and ensure its return to operational condition.
- diagnose and determine the cause of faults within integrated electromechanical power and control systems

In addition a Plant Operations Technician will need to understand:

- complex thermal, chemical, mechanical and electrical energy conversion processes
- the principles, design and operation of plant, systems and equipment used for energy conversion and production

In addition, a Plant Operations Technician will be able to:

- safely and efficiently carry out routine and non-routine operating procedures on plant and equipment
- monitor and control the operation and performance of the plant and equipment
- handover and accept responsibility for plant and equipment
- evaluate and solve complex problems within energy conversion plant and systems
- rapidly and correctly respond to contingencies and abnormal conditions, to maintain energy conversion and production plant and equipment within operational parameters

## Training, Tutoring and Assessment

---

You will attend Olive Grove one day a week for 3 years to build skills and develop your knowledge in order for you to be prepared to complete End Point Assessment (EPA). You will develop a portfolio that is required for EPA in your third year of study.

## End Point Assessment

---

Knowledge test

Observation

Technical interview

*For more information on the assessment for the Maintenance and Operations Engineering Technician Apprenticeship please see the full assessment plan in the Apprenticeship Standard documentation. We will arrange the End Point Assessment.*



## Apprentice Entry Requirements

English and Maths at Level 2 or equivalent

## Progression Opportunities

Progression to HNC available following completion of this Apprenticeship standard

## More Information

To find out more about the opportunities and financing of apprenticeships and to discuss your particular requirements, please email [apprenticeshipsandtraining@sheffcol.ac.uk](mailto:apprenticeshipsandtraining@sheffcol.ac.uk) or call **0114 260 2600** to speak to one of our friendly employer advisors.

## Get In Touch

### Email

[apprenticeshipsandtraining@sheffcol.ac.uk](mailto:apprenticeshipsandtraining@sheffcol.ac.uk)

### Call

0114 260 2600

### Twitter

@sheffcol

### Facebook

[facebook.com/thesheffieldcollege](https://facebook.com/thesheffieldcollege)

### LinkedIn

[linkedin.com/company/the-sheffield-college](https://linkedin.com/company/the-sheffield-college)



## Why choose The Sheffield College?

As one of the region's largest providers of apprenticeships, The Sheffield College is more than just your local provider; we deliver the dedicated support you need to source, train and get the best out of your apprentice.

*We appreciate how difficult and time consuming it can be to recruit suitable staff. That's why we will source, shortlist and prepare candidates before you meet them.*

*We help you get the best deal by finding the right funding and we handle the paperwork to make the process of arranging an apprenticeship training programme as smooth as possible. Our employer partnership team, apprenticeship tutors and assessment staff are experts, and we invest time and money in training and upskilling them regularly so their knowledge is up-to-date and industry standard.*

*At The Sheffield College we go above and beyond; we know that every business is different and we help to develop apprentices who will meet the needs of your business.*